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Book #73

Collection and Field Note Book

No. 73

(May 10, 1964 - July 19, 1964)

(45215 - 45683)

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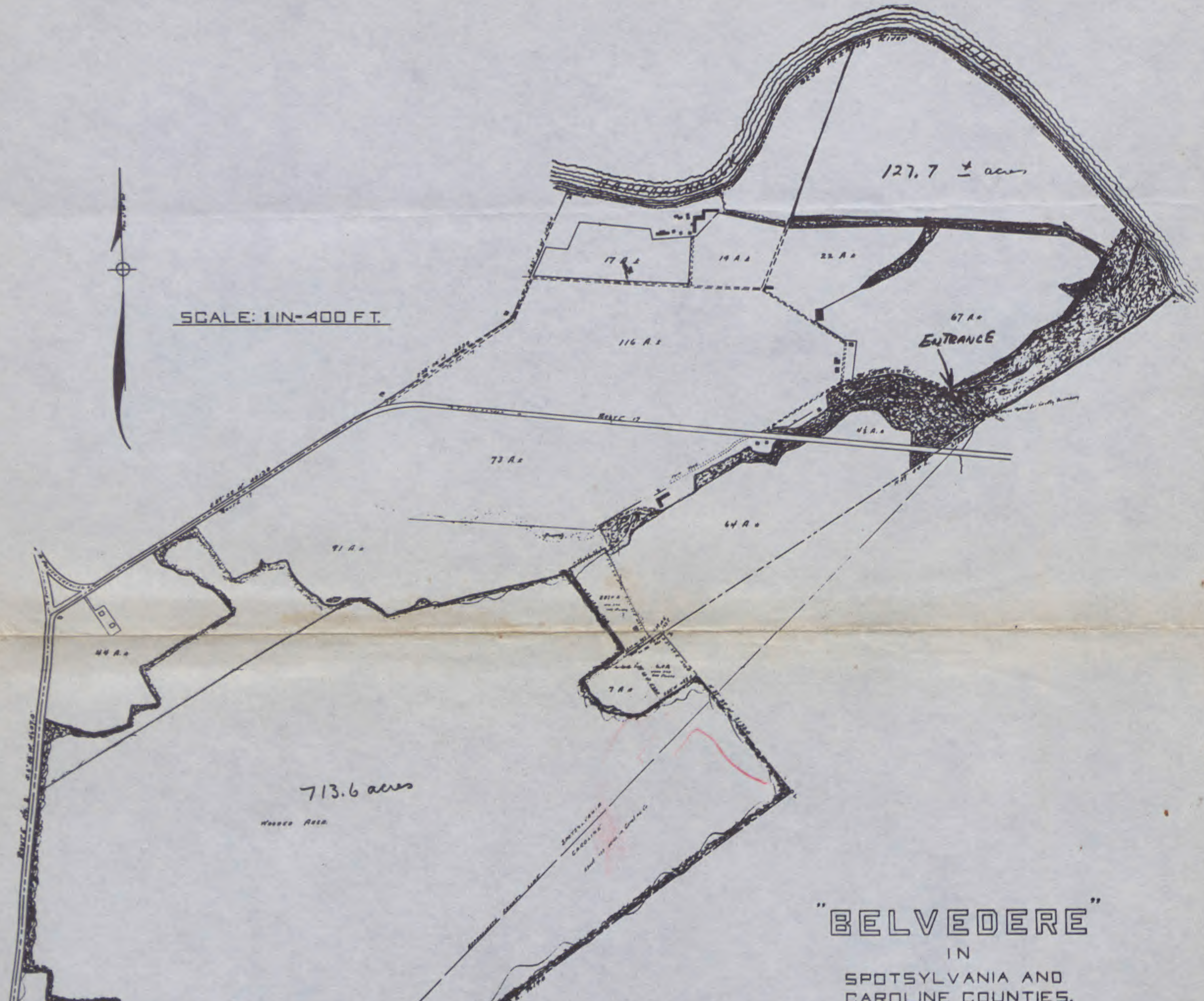
SCALE: 1 IN-400 FT.
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127.7 ± acres
17 A ±
14 A ±
22 A ±
116 A ±
67 A ±
ENTRANCE
ROUTE 17
73 A ±
4½ A ±
64 A ±
91 A ±
44 A ±
7 A ±
713.6 acres
WOODED AREA
SPOTSYLVANIA
CAROLINE
45 A ±
13.0 ACRES TO MRS BELLE EASTBURN
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CAROLINE COUNTIES,
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1964

May 10 – Airtrip N.Y. to Caracas.
left 4:30 p.m. Convair 880 left side.
at 7:00 p.m. two rather small islands – rather triangular in shape. Largely scrub-covered. first with fairly large bare areas, other one with a small lagoon in its north end, appear very flat. Not very green.

7:15 Hispaniola – but visibility very poor.

May 12 – Caracas

Mangifera indica
Euphorbia cotinifolia
Sansevieria zeylanica
Euphorbia pulcherrima
E. tirucalli

May 12 – Caracas to Maracay
by bus.
Just out of Caracas the
hills are covered by small
houses. Some trees and
other plants among them.
Upper parts of higher hills
brush-covered.
First hills are
covered by a deciduous
thorn scrub with a very
liberal scattering of green
Fourcraea and Agave. A
few green bushes. The
Fourcraea and Agave very
soon disappear or become
scarce. Vines abundant.
Hills are formed of thinly
bedded shales or schists,
very much distorted.
As we climb, the scrub
becomes greener. Near
summit a degraded
evergreen ~~fo~~ scrub forest.
Summit ridges a mixture
of low shrubs and Pteridium,
some Gleichenia. Top area
appears to have been
burned and is almost
continuous Pteridium.
Some new burn scars on
~~St~~ upper w. slope. On
this slope some ridges
are grassy: Melinis,

Wigandia on rocky cuts.
On this slope the evergreen
belt is less developed,
mostly in ravines.
Much more burning here.
P 2 B&W photos of a very
degraded hill with
Pteridium & scattered
bushes near Los Teques.
Beyond here the hills are
extremely denuded and
much burned over. Only
scattered patches of
woody vegetation.
Cecropia very common in
wooded patches.
A little farther down
the woody vegetation
becomes deciduous. The
cover becomes more abundant,
but is spiny & microphyllous,
a thorn-scrub-forest. Some
large patches of grass.
Lower hills a patchwork
of shifting cult. and
thorn forest. In valley
bottoms Samanea, etc.
and cane fields. Some
Guadua. Hills are
more and more covered
with thorn forest, little
clearing.
P Photos in valley bottom
of cane field and thorn forest
on hills.

On lowest hills is Curatella savanna. Curatella shrubs or small trees more or less evenly spaced, in places almost close enough to be called open scrub. The grass between is burned down to basal tufts. Much soil showing.

P One photo from bus.

Here the savanna can scarcely be due to impeded drainage, as slopes are up to 45°.

Flat plain is largely cultivated — bananas, etc. around periphery, cane more common toward interior. Scattered large trees, mostly Samanea.

Trees & Guadua more abundant along field boundaries.

Some large areas evidently too dry for cultivation & not suitable for irrigation, with sparse coarse grass and ~~scatterd~~ scattered large Samaneas, locally close enough together to be called forest, mostly must be called savanna.

This part outside Maracay.

May 14 — short auto trip up into hills on road to

Hills completely denuded except for thin strips of ~~any~~ ~~forest~~ evergreen forest in ravine bottoms otherwise covered with a savanna vegetation of Curatella, Byrsonima, etc. widely spaced, with a ground layer of Melinis. The bushes become more sparse on upper slopes.

The road goes up from Maracay over an alluvial fan of great boulders. The hills are granite. In the main ravine the prominent tree is Anacardium excelsum. Mangifera common, also.

Lower hills, heavily grazed, covered by scattered trees, a few each. Thickets in ravines. Trees mostly green. In places lower story is grass, in places a more or less microphyllous scrub.

This zone mostly sp.

Villa de Cura — grazing pattern very conspicuous on hills. Shrub savanna.

May 14 – trip by bus to Puerto Pirito.

Lago de Valencia – very narrow marshy fringe with grass sod, Eichhornia, etc. No tall emergent plants.

Some plantations of Musa nana, some sugar cane. As we approach hills the ground slopes up slightly. Pasture with scattered trees. Many Samanea. Roadsides lined with trees + shrubs.

(Insert from p. 5)

Beyond Villa de Cura, is a pass through the mts. Flat bottomed valley. ~~Scattered~~ large trees. Some ~~[illegible]~~ bottle trunks. Road lined mostly ~~[illegible]~~ with Gliricidia sepium.

Hills become more wooded, but ~~[illegible]~~ very irregularly. Mosaic of wood + savanna.

Then hills more and more eroded, ~~and~~ overgrazed and bare. Cultivation and trees in valley bottom. Dry in aspect.

P

b&w 3?

Los Monos de San Juan (San Juan de los Monos) striking limestone peaks. Dry savanna on surrounding hills of mica schist, severely burned, some fire scars. 5 photos of monos and savanna covered hills. Upper slopes, below cliffs, of monos, forested.

Near San Juan the savanna slopes are ~~less~~ more luxuriant, but typical Barquisimeto-[illegible] savanna, ravine/woods thickets in ravine bottom incl. large trees. Spondias, Anacardium, Mangifera, Gliricidia, Cecropia, Samanea, etc.

At San Juan, turned east in a large valley. Some relief in bottom, this covered by savanna. Flatter places cult. Bananas, mangoes, breadfruit.

Lower slopes with savanna, thickets of Acacia, other legumes, Spondias, Cecropia, etc. Much of this newly burned. Erosion severe.

Then lower hills with semi-deciduous scrub or scrub forest or open scrub forest.

1964 Venezuela

Shifting agriculture.

A limestone crest on left, very rugged. Slopes above and below cliffs wooded.

Lower hills with a semi-open scrub forest, semi-deciduous, with Guazuma. Some cult

? flat bottom burned or pastured. local patches cult. Whole aspect rather dry. Patches of tawny grass on hills, mostly wooded, though.

Creek with water.

(9,25) San Sebastian -

Then in rolling & hilly valley bottom a mosaic of savanna and deciduous & semi-deciduous scrub & scrub forest.

Bursera, Acacia, Prosopis, etc. many species. Many vines. Some hills very bare.

P. On flats in valley a sparse thorn scrub of Acacia spp. Here in thickets is Jatropha sp. (cf. curcas), Psidium sp.

Enterolobium

Then extensive savannas of Hyparrhenia rufa with scattered trees of various sizes and kinds.

Small incised stream. (near Granja Altagracia) just before fork in rd. San Casimiro left Altagracia rt. Some of this shows grass to 1-1.5 m. tall, other large areas burned

Gallery forest of many species of fairly large trees - Anacardium, Enterolobium, Guazuma, Samanea, Muntingia, Cecropia,

San Casimiro

Rio Tuy.^{no} – deep ravine, some flat ground in bottom

Slopes denuded except for steep wooded ravine. Grazing pattern heavy. Much burning. Upper slopes and ridges without scattered shrubs, lower with them. Road follows ravine. Where ravine is narrow thickets, where broad cult. & clumps of Guadua. Erythrinas. Some Gynerium along stream and on a few wet slopes. Manioc & bananas cult. on slopes.

Hills are of schist.

Now there are higher hills

that are wooded near tops. Coffee plantation with native shade trees in valley bottoms or lower slopes. Much banana cultivation. Guadua locally abundant.

Lower hills with tall, almost closed deciduous scrub. Also badly burned locally. Considerable area of this, but with patches of grass. In places grass covers most of area, esp. on steep slopes. Curatella with it locally. Slopes about 45°.

Now in drainage of Rio Tuy. Deciduous scrub and scrub forest.

Long nests hanging from trees, made of huge thorns. Gallery forest of large arched trees in ravines.

Muntingia common.

Coming out into very broad valley. Hills have deciduous forest with some Cereus.

Cua.

Valley rolling and largely cult. except rougher spots. Scattered trees and hedgerows ~~Charallave~~.

aponte near

Ocumare del Tuy.

Savanna on rolling stony ground. Thickets in depression. Wider depressions with cult.

San Francisco de Yare.

A large low flat area of microphyllous thorn forest, flat topped Acacia. Rolling land with very open scrub, and some hills with bare deciduous forest in patches. Some cultivated (fallow) or bare pasture. Bromeliad in bare trees.

Then more relief and hills mostly covered by low deciduous forest.

On left a flat valley bottom with cultivation. Hills with deciduous forest on other side.

Some savanna on rolling ground but deciduous forest separated from it by a fence.

Some low spots with rather widely spaced large spreading deciduous trees.)

Santa Teresa.

Crossed Rio Tuy

1964 Venezuela

May 14 – east of San Sebastian,
Est. Aragua

in thorn scrub

45
~~5~~1215 Jatropha
1 thicket

1 16 Acacia macracantha det Steyermark 1980
common

2 17 Acacia macracantha "
occasional

May 14 Puerto Piritu, 1 m.
Est. Anzoategui
on sand flats along
strand just back of beach.

1 18 Alternanthera
very common

1 19 Calotropis procera (Ait.) Ait. f. det Austin 78
common

shrub 4 m. tall, bark
– thin, peeling, brownish.
– shrub 2 m. tall; flowers
– orange yellow.
small tree 5 m. tall,

very prostrate,
forming loose mats,
– glaucous.
– shrub 1 m. tall,
glaucous, flowers
pale purplish.

Bottomland forest deciduous, or semideciduous.

Then rather steep rugged hills with deciduous forest or dec. scrub, evergreen forest in bottoms of deep ravines, esp. along Rio Tuy. Cedrela, Tabebuia, Hura, Inga? Cecropia, Prosopis?, are common trees. Guadua. Hills are much burned, some denuded of trees. This more and more as we go down river.

There has been no Curatella savanna for many miles, none here. North hills are mostly bare, grassy or the grass usually burned off, only a few widely scattered fairly large trees, and thicket in ravines. Some slumping on steep slopes.

Crossed large tributary.

A few tiny patches of wood left on hills, otherwise few even scattered trees. Ochroma, except in gallery along ravines.

Now, suddenly, the hills are somewhat green, from young growth of grass. Some, at least, Panicum maximum

slopes now with green thickets. Much Ochroma, Cecropia, Inga, Trema, forming a 'fairly good' secondary forest with thick undergrowth — Heliconia, Lantana, Piper, Eupatorium cf. odoratum, Vernonia? Gleichenia (large) Miconia, large aroid, Miscanthus-like grass on road cuts, Vismia.

Many vines and some bromeliads on large trees that are relicts of older forest, not on the Ochroma or Cecropia.

Patches of Gynerium (must indicate seepage)

Parque nacional de Guatopo summit - Los Altos del Tuy.

P Montane rain forest, rather degraded, but dense and luxuriant. About 800 m.

T 20° rainfall ± 80"

Down from here, thick montane rainfall. Much balsa on left slope, less disturbance across ravine on right.

Forest rapidly assumes a more xerophytic aspect as we go down, but Cecropia and Ochroma remain common. Euterpe occasional. Many vines.

Hills begin to be cleared and grassy.

Cross Rio Tuy.

Erythrina poeppigiana shading cacao + bananas.

Much Guadua. Inga. Some other trees in shade, too.

Then irregular secondary forest in broad valley, alternating with banana patches with some shade. Then more or less grassy hills. Cocoa plantations on flat ground. Gynerium brakes.

Out into rolling country partly in grass, patches of wood, thickets, cult. patches, patches of Thalia geniculata.

Crossed bridge to main highway.

Hills now dry + grassy. (La Encruciada), near Caucagua.

Grassy hills with groves of Scheelea. Thickets ~~of~~ with Triplaris americana.

Hills become more and more wooded. Low rolling land

grassy with thickets and scattered trees. Hanging roots of a treefern covered with spines.

Hills far to west have many fires. Many burn scars along road and in nearby hills. Mixture of thickets and openings on rolling hills. Gynerium along streams and in wet spots. Some is burned. Guadua also.

Bardowski was here 15 years ago and it was unbroken rain forest. Now completely degraded. Some cacao
80-90" rainfall

Road to Higuerote to left.

Tacarigua Pritchardia pacifica cult.

Tabebuia cf. pentaphylla (in fl.) as cacao shade. Much cacao here. Bananas also.

To coast on coastal plain degraded vegetation: cult. patches. bananas. cacao, swamp with Gynerium, Heliconia, — more cacao than anything else.

Some coconuts. Much tangled thicket.

Citrus orchards.

San José de Rio Chico.

East on coastal plain a complex of thicket, large trees, patches of bananas, swampy spots, patches of secondary forest, some coconut trees, etc. Roystonea (apparently spontaneous). Crossed river.

Then some open areas, mostly growing up to scrub of varying heights. A little cult., some rather big pastures, cacao plantations. Guadua. Gynerium. These line watercourses. Much cacao. Locally breadfruit & mangoes, some very large. A yellow Tabebuia. El Guapo.

Forest increases in proportion eastward but is being cleared rapidly. Cecropia abundant along road. Mostly secondary, bushy. Some degraded primary. Scheelea common, also Triplaris. Every stage of degradation. [illegible] locally one of dominants.

Then country becomes more dissected but not higher. Veg. is an open

deciduous or semi-deciduous forest with a closed tangled understory.

Then a very large, flat savanna of bunch grass and scattered large trees, partly evergreen (Samanea) partly deciduous (Tabebuia).

Then hills with deciduous forest, Bursera, etc.

Crossed [illegible]. Unare.

Dry wooded hills [illegible].

= savanna on left, middle ~~then on left but~~ distance and apparently [illegible] a [illegible] coconut plantation.

Then hills and flats covered by deciduous scrub forest, very white, tangled, somewhat spiny, some arborescent cacti.

P Bromeliads on ground, some Tillandsia usneoides on some trees. Photos of general aspect and close up (b&w); on coast ~~[illegible]~~ bet. Cupira and Boca de Uchire. Prosopis, Caesalpinia coriaria (dividivi) with spiled pods. Pereskia. Prosopis largely dominant. Cacti, esp. Opuntia, more abundant eastward. A low arched glaucous species of Opuntia with narrow joints common in openings in bare ground.

Around large lagoon a broad zone with no vegetation. Around this a narrow to broad belt of Batis. In this some scattered Avicennia. Locally Cereus sp. (columnar) growing in Batis flat! The Avicennia is outside the bare zone.

Turned inland into high hills covered with the same forest.

The Brazilians say this white forest looks like caatinga of NE Brazil.

On the other slope of the hilly stretch the forest becomes more or less green, taller, more viny. Perhaps a semi-deciduous scrub forest.

At the base, on flat country, deciduous scrub forest again.

This extends for some distance, mostly over low hills. Trees generally white to gray. Locally

green where Prosopis dominates, but this is largely along the road where a broad strip has been cleared. Scattered green trees in the main body of the forest.

Large flat area, still dominated by this same forest, but with perhaps more evergreen trees scattered in it. Occasional large areas cleared.

Calotropis common on bare cuts and banks along road and pipe-line.

Turn-off to Puerto Piritu.

Strand at Puerto Piritu — a sand flat behind a very slight beach ridge of quartz sand, fine.

Few plants:

Alternanthera
Calotropis
Cynodon dactylon
Tribulus terrestris
Boerhavia cf. repens
Prosopis cf. juliflora (prostrate)
Thespesia populnea (planted)

1964 Venezuela

May 15 - trip by bus out of Jusefin.

Savanna in immediate area of Jusefin has scattered shrubs but few trees, grass grazed short, but closed. Distribution of shrubs very uneven, becoming more conspicuously spotted as we progress - the spots becoming open scrub in places.

Broad ravine of Rio Guarapiche wooded with a complex of thickets of mostly deciduous (perhaps about 70-75%) trees & shrubs, and savanna and open scrub patches. A slender upright bamboo is very common - clumped.

Followed this river valley for a time - to La Toscana. There are various small farms in the ravine and outskirts of La T.

Beyond La T. veg. varies from grassland with scattered shrubs to open scrub and thickets. Many small farms along road. Gallery forest along watercourses & ravines. Considerable evidence of burning, some recent. Then considerable open plains.

Est. de Monagas

Jusepin 8 am. Turned right at Hotel La Encruciada, to go south, through plains with low grass (grazed) and a few scattered shrubs. Then a settled area near a ravine. In this ravine a gravel pit shows cross bedded gravels under a thick layer of fine sand and silt which is red below, shading to yellow gray and gray above - the gray color perhaps due to charcoal. In places overlain by red gravel possibly artificially placed

P there. Kod. roll. 1-0-1. This is obviously a relatively recent terrace deposit compared with the "upper llanos" surface on both sides. It has come about under sufficiently pluvial conditions to get a typical terrace deposit, gravel below and fine above, and long enough ago to have a soil development: blackish to gray to yellow gray to massive red (silty fine sand) (to bedded gravel.)

This broad river ravine covered by farms and degraded forest.

1964 Venezuela

Town of Maturin just south of river, ravine or plain.

South a mile or so, is a vast plain with no trees
1300–1,400± mm prec. strongly seasonal
(May) June – Aug. most rainy.
dry period Sept. – ~~Aug~~, but some rain Sept – Jan.
Water table shifts markedly.
This is called part of Lower Llanos. Organic matter disintegrates rapidly.
The area has been used ~~[illegible]~~ for livestock for a long time.
Soil fine, gray for 9± dm turning yellowish.
~~[illegible]~~ Elyonurus Grass tufts, ~~[illegible]~~ (2) 5–10 (15) cm apart, burned to within 3–5 cm of ground. This with little also forms matrix or background.
Scattered anthills with or without tiny Curatella to 25 cm. tall. These bring up the yellow subsoil, as they are bright yellow.
In this are spots of richer vegetation marked by Hyptis sp. and Andropogon sp.:

Profile: very fine sand
A1 gray at 10cm pH 5–5.5
A2 lighter gray pH 6
B1 yellowish pH 5–5.5 ~~[illegible]~~
90 cm. B2 reddish pH 5.5–6
(this wet)

Grasses
Andropogon cf. sellowii
Elyonurus
Sclerospora
Paspalum
Axonopus
Melinis
Trachypogon
Various legumes have tuberous roots.

Stylosanthes
Indigofera

From here on – first some more typical savanna with Curatella. Then a large depression with Mauritia and other trees.
More savanna.
Then a large river with disturbed and more or less undisturbed gallery forest. cult. patches of manioc & bananas.
Then savanna again.
Then ~~lots of~~ great area similar to that examined.

with only tiny Curatella.

Enormous area of this with very widely spaced patches of wood and very occasional isolated trees, with much fresh burning locally.

Crossed another river with gallery forest.

Then open area with abundant Curatella not more than 15-20 dm. tall. 1-2 m apart - becoming less abundant as we go on. A very few wooded spots, but much on horizon.

Then a large "morichal" Stopped here. It occupies a depression of several m. depth, muddy in bottom, the palms surrounded by a muddy area of rank herbs and suffrutescent herbs to 2 m. tall. Various sedges, ~~Rhyn~~ Ludwigia, melastomes, grasses, etc.

Photos
k & b&w
(begin roll
b&w 2)

South of this a vast slightly rolling completely open area, no trees even on the horizon. Tiny Curatella abundant, 1-3 dm. tall. generally short grass. some fresh burns.

Then an area of shrub savanna with shrubs 0.5-1 rarely 2 m tall. locally dense scrub, forming a mosaic. patches of open Mauritia, then dense morichales occupying a considerable area sloping down to a depression with a grassy swale, then a river.

Rio Morichal Largo.

On other side of this an immediate escarpment of at least 15-20 m. or more.

On top of this more open area with abundant dwarf Curatella.

Curatella slightly larger outside the fence, along road. Area completely open - ~~to forest~~ several miles away or beyond the horizon. Then a small patch or two closer to road. Recent burns with dead Curatella shoots.

Some small ponds but mostly in artificial pits.

To right no trees as far as one can see. On left a forest (gallery?) on horizon.

This relation extends for some miles. The "treated" area must amount to many sq. mi. Doubtless if the shrubs are destroyed once they are kept down by frequent burning.

Where there are borrow pits in this region the red soil begins only a few inches down. But this should be checked in fresh holes.

A small coconut planting near village. Looks poor. Village called Temblador (= electric eel).

Beyond this, a vast treeless area. Then the Temblador compound of Creole Co. where we had lunch.

Return trip —

Some areas where, after a recent fire, Byrsonima a few inches tall is the only plant remaining.

Northward from Temblador the gray layer seems to be much thicker than the few inches ~~a~~ in the Temblador region.

Gallery forest along Rio Morichal Largo a tangled mass of Ficus, Mauritia, etc. with

many lianas, Heliconia and ferns such as Blechnum on floor. A peat layer on ground, from 8 cm to very thick on white sand. The canopy is irregular, up to 15 + m high.

In river are Eichornia, Pistia, Salvinia, Azolla, and an enormous thickness of Spirodela. A bit of Montrichardia in a marshy place.

North of river the gray or yellow gray layer is again only 1 – 2 dm. thick.

Morichales tend to be surrounded by a marshy zone. An open ~~M~~ Morichal has many dead Mauritia, bare poles.

P

Stop at a "mata" or patch of wood in savanna. The surrounding plain is covered with bunch grass with spaces filled by an Eragrostis

Axonopus

scattered dwarf Byrsonima + Curatella with heavy root crowns. Borreria very common. Other herbs less so.

The patch of woods is of secondary nature, including Vitex, Buchenavia capitata, Desmoncus, & various secondary species surrounded by a zone of Anacardium with its leafy surface slanted outward shaded from above by the forest trees, with little or no grass beneath them. Doubtless shaded out inward but persisting on edge. Being fire resistant the Anacardium maintains itself and keeping the grass down, protects the interior more fire susceptible trees from fires.

Since the mata flora is secondary, it may be an indicator of a former patch of better forest, a relict perhaps. People would have cut it and raised a crop or 2 of corn, abandoned it, and it would have reverted to secondary forest, leaving a "pseudomorph" of the former forest-patch.

Farther north, across a river, are some pools of water. also water in borrow pits indicating that the water table is very near the surface at least locally.

Not far south of ~~the~~ Maturin is an ~~extensive~~ area with scattered large umbrella crowned trees of various species, probably relicts of the former forest. In one area these are close enough to form an open or semi-open forest, with much bamboo. This may be similar to the original forest of the region.

May 10 - Jusepin area - the upper terraces are principally covered by Curatella savanna the ravines and slopes by thicket.

From here west on main road toward La Ceiba. In valley bottom near Jusepin where forest is replaced by thicket the thicket seems to have a much more xerophytic aspect than the forest.

Back up on the terrace - said to be "Lower Llanos"; Curatella savanna seems general, but the Curatella has apparently been cut at some time in the past, as it is mostly not more than 1 m tall, a very locally taller. The grass is generally a bunch-grass (Axonopus ?) 0.5 m or usually less, tall. Locally recently burned. Abundant patches of Hyptis suaveolens with dry inflorescences to 2 m.

A few miles west we seem to be on upper slopes of a very wide river ravine. Here the Curatella and Byrsonima are much more abundant and taller, ranging up to 3 m tall; with very gnarled aspect. Locally close enough to be called open scrub. Farther down in ravine is rather low gallery forest. The scarp on the south side is steep and abrupt, but rather dissected.

El Tejera

Curatella savanna again. rather low but some shrubs

to ~~4~~ 3 m. the grass is quite short, seldom 20 cm.

Then a very large area in which there is only ~~the~~ an occasional tiny plant of Curatella. Mostly short, burned off grass. Obviously treated. After that, on south side of road more or less normal savanna, on north side no bushes.

Then a mosaic of treated and untreated land. Then large areas treated, or at least, free of bushes. Then areas that are actually open scrub to open scrub forest

Stop in an area of ~~thin~~ open scrub forest. -

Here on slightly undulating sandy ground is a mosaic running from an almost closed growth of Curatella to 5 m tall with an understory locally of Croton, locally of Casearia silvestris with some admixture

P

of Zanthoxylum + several other shrubs, to open scrub forest of same composition

P

but without Croton or locally with it, and with some scattered grass and Eupatorium odoratum to an open scrub of ____ which is a fire-resistant thing. In ~~both~~ all are Curatella of very good size

Cochlospermum
Godmannia
Vitex
Zanthoxylum
Randia
Psidium
Casearia spp.
Croton
Genipa

In the open Casearia scrub there is no grass, yet the bases of the shrubs are charred. Possibly annuals or geophytes provide fuel.

This seems to be on the bottom of a very broad ravine.

As we get back upon plain there are disturbed outcropping of indurated laterite or "arecife". This

is not a continuous crust, lying on a gravel with much ferruginous matrix.

On this is short grass with scattered Curatella bushes.

This plain here is very much cut by ravines, landscape red. Different scarps show different degrees of induration. On plain are tracts of large laterite boulders half buried.

This changes rapidly to an ungullied plain, short grass with rather widely scattered rather large Curatella (2–4 m.) (Badowski says this grass never reaches more than an upper limit of 1 m. in growing season & now it is to 20 cm.

Curatella soon becomes more abundant, then much less so or almost absent over large area, some small outcrops of laterite. ¶ Terrain slightly rolling.

many large boulders of laterite locally. Cuts show gravel. Very large area with almost no Curatella, even tiny ones. Rolling grassy hills very little Curatella, but in depressions a very broad ravine it forms open scrub, and there are a few remnants of gallery forest. Some patches of well developed Curatella savanna or plain. Surface soil is usually gravel, but patches of sand remain.

Possibly excessive burning can, unaided, remove Curatella?

Much gully erosion locally. In gullies may be c̄ Curatella but tending to be richer shrub composition.

A deep river valley several miles wide and perhaps 50 – 75 m deep, cut in this plain is essentially wooded. P Photos of road cut into escarpment to show nature of material and of escarpment itself. Gravel of pebbles and cobbles up to 10 cm long, rather flattened, rounded. This valley is Quebrada or Rio Gapa. Wood in flat bottom tends to be an irregular thorn forest, with Prosopis, Cereus, etc. and openings with scrub. Croton, etc.

Pereskia Copaifera
Platymiscium
Caesalpinia

Shrub layer is mostly not spiny – Croton & other woolly shrubs.

Mesa La Ceiba.

Toward Santa Rosa in this valley bottom a less thorny vegetation, essentially an open Croton P scrub with scattered trees & clumps of taller shrubs. photos road + 3 + 4

This is scarcely spiny

except for Pereskia, which is common and Cereus, which is occasional.

The opposite escarpment shows spectacular, scenic erosion. At top are rounded gravel hills, with Curatella savanna. Laterite exposures near tops.

Then eroded gravel with an open scrub similar to that in bottom of Quebrada, but greener, perhaps more spiny.

This changes to an open microphyllous thorn scrub or scrub forest.

Then, farther on, an almost closed forest more or less microphyllous with Bromelia pinguin on ground. Stature about 8-10 m. This alternates with leguminous thorn scrub-forest, and with semi open areas.

Budowski says less rain in this whole area than where there is savanna. Need a certain amount to provide grass for burning. Overgrazing can also change savanna to scrub.

Gradually climbing through thorn forest, to a plain covered by thorn scrub. Big oil refinery. Santa Rosa. Continue through microphyllous thorn forest. Seem still to be climbing. Oil installations throughout the area.

Thorn forest varies from open to closed, much Pereskia.

Then a few open areas with dry grass & scattered large trees - prob. artificial. Mostly thorn scrub or forest, very irregular. Pereskia is commonest tree, usually dominant.

Then Anaco.

South toward El Tigre through thick thorn forest. Occasional clearings along highway. Thorn forest changes from green to leafless and white, or slightly green. Trees here mixed, but mostly deciduous. A few Cereus.

Many vines, some climbing Cereus! Some areas scrubby.

Cantaura

Same semi-deciduous to deciduous forest, locally degraded.

1964 Venezuela

On top of rolling hills forest opens up to savanna, in lower spots it is thick forest, green to deciduous. Then an extensive high plain with very open savanna, with very widely scattered Acacia, Curatella, etc. Then thicker Curatella savanna, then mosaic of more open and less open Curatella savanna. ×Mauritia scattered along a shallow ravine. Rolling flat land, mostly very open, but with desiccating depressions. Vast sandy area with almost no trees or bushes. Locally more shrubs.

In shallow ravine the trees are closer together small river.

Then more open grassland with few bushes. Then almost none for a distance.

Stopped at a slightly rolling area of bunch grass on ~~a~~ very fine gray silty sand, firmly compacted, over which is drifting a thin layer of reddish sand, partly covering ground.

P

Photos of this showing tufted Bulbostylis, a leguminous herb several spp. grass. Curatella is absent or almost so ~~from most of it~~ but there is a patch of ~~B~~ Byrsonima toward the top of a small rise on top of which there is a small borrow pit, which cuts thru a 2 ft. yellow silt layer, very hard, over a layer of concretions.

[illegible]
Trachypogon
Axonopus
Aristida
Andropogon

+ Casearia

In the area where the Byrsonima forms a scattered shrub layer there were buckshot on the surface. Surface is hard. Here the flora is a bit different, with Rhynchospora

In bunch grass there are a number of legumes Cassia 2 sp. Galactia 2 spp. Stylosanthes 2 spp. also Passiflora foetida.

1964 Venezuela

May 15 - 2 km. south east of Maturin
in open, treeless grassland
with sprouting Curatella
~~stub~~ crowns.

*45 220. [illegible] Andropogon
1 common in patches

1 21 Stachytarpheta
occasional

1 22 Hibiscus Pavonia cancellata det. Fryxell, 1977
occasional

1 23 Buchnera
occasional

1 24 Hyptis cf. suaveolens
very common in patches

1 25 (comp.) Centrantherum punctatum Cass. — det. H.E. Robinson, 1974
occasional

1 26 Desmodium? Zornia marajoara Huber
occasional

2 27 Waltheria americana det. Steyermark, 1980
common

1 28 (legum.)
common

1 29 Andropogon
common

1 30 Andropogon
common

May 15 - about 5 km. s. of Rio Tigre,
about 60 km s.e. of Maturin
in marshy ground in depression
around a "morichal" or grove of
Mauritia minor.

flowers small, pale purplish.

procumbent; flowers bright yellow, maroon center.

flowers blue.

dead panicles to 2 m. tall; very aromatic.

flowers purple.

erect suffrutescent herb, sparsely branched, to 1.5 m. tall; flowers yellow.

in stiff clumps

in tufts

1964 Venezuela

45231 Xyris
3 common

1 32 Rhynchospora
abundant

1 33 (eriocaul.) Syngonanthus caulescens det. Moldenke
rare

3 34 Ludwigia
common

3 35 (celastr.) Davilla det. Steyermark,
common around edges of

May 15 - Rio Morichal Largo.
25 km. n.w. Temblador, s.e. of
Maturin

4 36 Ficus
common in gallery forest
on white sand covered by peat.

May 15 - between Rio Tigre
and Rio Guanipa, about
50 km. s.e. Maturin
small patch of woods
in savanna.

3 37 Buchenavia
in edge of

2 38 Cordia verbenacea DC.
at edge of

1 39 (celast.) Davilla det. Steyermark 1980
at edge of

1 40 Vismia
at edge of

4 41 Vitex capitata Vahl det Moldenke
common in

Monagas

flowers yellow

suffrutescent herb 1-2 m. tall;
petals yellow.

1980

woody twiner, climbing
on bushes; fruit yellow, aril white

tree 15 m. tall, with clean
trunk and spreading
roots at base, bark
milky when cut; fruit green.

tree 15-20 m. tall; fruit green.

shrub 1 m. tall; corolla white.

twining vine, fruit orange-
yellow; aril white.

small tree; sterile.

small tree, flowers violet
"flor azul"

1964 Venezuela

45242 Simarouba glauca
2 occasional

same – savanna just
outside a patch of forest.
4 43 Curatella americana dtr. Steyermark 1980
common

2 44 Ochna Ouratea grossourdyi dtr. Steyermark 1980
occasional at edge of
patch of forest
2 45 Psidium
occasional at edge of patch
of forest
1 46 Anacardium occidentale L.
abundant in savanna
around patch of forest,
forming a narrow belt
at outside of forest.
4 47 Byrsonima crassifolia (L.) HBK
common in
2 48 Psidium guineense Sw.
common in
1 49 Cnidoscolus urens Arth.
occasional

1 50 Eragrostis
abundant between
bunch grass
4 51 Psidium
occasional at edge of
patch of forest in savanna
2 52 (apr.)
rare in patch of forest in savanna

Monagas

tree; fruits blue-black,
fleshy, not very tasty.

sprouts from root crown
that reach~~ing~~ surface of
— ground
slender shrub 3 m. tall,
receptacle pink, seeds
— green, flowers yellow.
shrub 3 m. tall,
flowers white; fruit immature.

shrub 2 m. tall, flowers
reddish; fruit immature
(receptacle acid-sweet
when mature and enlarged)

shrub 1.5 m. tall,
— flowers yellow, fruit green.
shrub 1 m. tall; fls white.

erect, lactiferous herb
to 1 m. tall, flowers white;
— stings viciously.
all seen dead, certainly
an annual.

shrub ~~3~~ 2 m. tall,
flowers white.

lactiferous tree; flowers
white.

1944 Venezuela

4525 3 (anacard.) Connarus det. Steyermark, 1980
4 occasional
54 Coccoloba
occasional

May 16 – about 35 km west of Punta de Mata ~~[illegible]~~
on highway, near fork to Tonoro, Monagas
in open to closed scrub
forest, mainly of Curatella

3 55 Casearia silvestris Swartz
abundant in opening,

1 56 Psidium guineense Sw.
common

2 57 Croton
abundant in undergrowth

1 58 Cochlospermum
rare

58a ~~59~~ Panicum? in open stream course

1 May 16 – 2 km. e. of La Ceiba,
Est Anzoátegui
in woods on escarpment

3 59 Strychnos P. fendleri det Steyermark 1980

May 14 – La Ceiba, Anzoátegui
in undergrowth in thorn forest

1 60 (sterc.)
occasional

2 61 Croton
abundant

Monagas – Anzoátegui

tree, fruit green.

tree, sterile.

shrub 1 m. tall,
stem corky, charred,
– flowers white.
shrub 1.5 m. tall, flowers
– white.
shrub 1 m. tall.

small trees.

prostrate, bluish.
eaten by cattle.

tree, trunk spiny.

shrub 1.5 m. tall, flowers
– bright purple.
shrub 1.5 m. tall, spikes
pendent.

May 14 - Between La Ceiba and Santa Rosa,

in xerophytic scrub on gravel flat

45262 ?
rare

2 63 ~~?~~
occasional

1 64 Erythr. ? Erythroxylon steyermarkii Plowman
common det. Plowman 1982

3 65 Lippia ? Cordia steyermarkii Agostini ined.
occasional

km.
May 14 - 2 m. of El Tigre

in bunch-grass savanna on fine silty sand.

3 66 Passiflora foetida L.
common

1 67 Galactia ? jussieuana H.B.K.
occasional

1 68 Galactea ? × Clitoria guianensis (Aubl.) Benth.
occasional

2 69 Cassia flexuosa L.
occasional

1 70 Bulbostylis
~~abund~~ common

1 71 ~~Stylosanthes guianensis (Aubl.) Sw.~~
rare Eriosema crinitum (Kunth) G. Don

1 72 Stylosanthes guianensis (Aubl.) Sw.
rare

---

shrub 1.2 m. tall; buds
— yellow.
shrub 1.5 m. tall, buds
— yellow.
shrub 1.5 m. tall,
aromatic.

prostrate, stems
radiating from center,
fruit orange when ripe,
— edible but not inspiring.
glaucous, deep rooted herb. flowers
— purple.
glaucous herb, very erect.

dry

erect, flowers yellow,
— turning red.
erect

1969 Venezuela

same — on hard compact yellowish, gray silt, with abundant "buckshot" concretions

45273 Rhynchospora
3 common

1 74 ?
rare, on bare soil

1 75 Palicourea rigida
rare

2 76 Byrsonima crassifolia
common locally

May 17 — about 20 km west of El Tigre

1 77 Linum
rare on hard cracked clay & silt with sparse grass

May 17 — ~~about~~ s.e. of Cachipo, headwaters of Rio Guere, west of El Tigre on edge of great ravine cut in savanna covered plain

1 78 Ouratea
occasional

1 79 Copaifera
occasional

2 80 Randia ?
occasional on bare soil

to p. 70

Est. Anzoátegui

caespitose, dry.

erect

sprouts from burned off root crown; thyrse and corollas yellow, fruit green.

— leaves very stiff

(L.) HBK shrub 1.5 m. tall, fruit green.

flowers yellow.

rigid shrub 1 m. tall,

— receptacle red, seeds green.

tree, pods reddish orange.

erect, stiff, almost leafless shrub 2 m. tall

1924 Venezuela

May 17 – bus trip, San Tomé – El Tigre – Valle de la Pascua + Calabozo
Left at 7:30

Principal street trees are Mango, Casuarina cf. stricta. Delonix. Mangos are ripe.

(Man from Mene Grande Co. says all savannas are burned at least once a year, some two or three times.)

S. of San Tomé Curatella savanna then a morichal along a river.

~~El Tigre~~ San Tomé

West of this extensive Curatella – bunch grass savanna, but with a conspicuous reddish sand layer between the bunches of grass.

In Market – El Tigre

onions, yuca, potatos, cabbage, bell peppers, cucumbers, carrots, beets, sweet potatoes, an assortment of squashes (C. max.), tomatoes, eggplant, garlic, rice, several colors of beans, – black, pale cream, brown, pinto, chili, melicocca, limes, maiz, Xanthosoma? (Colocasia?) ginger, papaya, peanuts, coffee, ~~[illegible]~~, dry maize, bananas, mangoes, yam, spondias, icaco, bixa, cauliflower, pineapples, okra

Talisia
N.Z. spinach
chives
broccoli
dividivi
guava
coconut
string beans
grapefruit
~~[illegible]~~
avocado
guanabana
Licania
Tamarind
Vigna cylindrica
P. lunatus
P. vulgaris
Cumanana
ocumo →
anacardium
~~[illegible]~~
mucuna
Batata
P. trifida

tomate perita
aji dulce

a medium size pear shaped tomato, as well as ordinary one.
chile is a small ~~[illegible]~~ [illegible] one, about 2-3 x 1-2 cm
celery, parsley, oranges, string beans, avocado, inga

Large tortillas of manioc called casave, up to 1 m across, 5-8 mm thick

Interesting that there are very few mangoes for sale – perhaps reflects that there are so many produced locally and available for the taking.

Merecure – Licania smells like sapodilla, ellipsoidal speckled.

P

Photos of some of products.

West from El Tigre –
Curatella savanna on a red sandy soil – the red sand reaching a considerable thickness 1 m + ? judging by an exposure in a pit.
~~[illegible]~~ The pit shows the cracked silty material, blocky, [illegible] 1 m.
Several low small hills, covered by concretions.
Seem to be old erosion remnants rather than dunes, even though shape is that of dunes. Some may well be dunes, others have laterite outcropping.

Trees very sparse to almost lacking.

1964

Stop some miles sw of
El Tigre in a low silty area
of Curatella savanna - the
P Curatella rather irregularly
dist. Finished b + w. roll.
Scattered low rounded
erosion remnants. Linum.

Somewhat west of this the
road skirts the head of
a great ravine with
red to mauve cliffs, mostly
wooded, but some gentler
slopes grassy.
P Photos, Kod. & start b + w roll.
Quite an assortment of tree
and shrub.

West of this the savanna
thickens up to form an
open^some^ forest, ranging even to
closed scrub forest and in
the other direction to savanna. The
grass is more abundant in the
more open end of the continuum,
scanty in the closed part, where
there tend to be shrubs.
Terrain becomes more rolling
and gullied.
Pariaguan
Aspect becomes suddenly
drier, relief more sharp.
Then greener again.
Locally more or less typical

Curatella savanna, more
prevalently open forest.
Then, suddenly, deciduous
scrub forest, then green
again with patches of
savanna. Generally
varies between ~~sat~~ savanna
and open forest. Grass
rather general.

Stop in savanna of
Curatella, Bowditchia,
Byrsonima crassifolia, B. coccolobifolia
Roupala complicata, Psidium
guineense, Casearia silvatica,
and bunch grass that is
up to 1 m. tall. Hyparrhenia
rufa. The trees here are
up to 10 m. tall, perhaps
10-20 m. apart or more.
Laterite crust exposed
in ravine (sample) shows
striking accretionary rings.
These may very well be
result of alternate wetting
and drying. Form around
nuclei of finely mottled
gray and brown clay.

Farther west the country
becomes ~~sk~~ more
dissected and vegetation
becomes more and more
~~a~~ deciduous scrub forest.

but with occ. green trees. Patches have recently been felled and burned. Area is open enough to be savanna, but tends to have a more or less continuous deciduous shrub layer.

Then a fine Copernicia savanna with sparse grass and locally some other trees. Where there are more other trees grass is denser. Patches of this palm savanna are fairly abundant. Interspersed is open deciduous scrub or forest, locally tangled deciduous thicket. Then microphyllous thorn forest and thorn savanna. Copernicia savanna with abundant grass up to 1 m. tall. The palms in any one place are fairly uniform in height, but from place to place range from 3 to 6 m.?. Some Acrocomia, but more in other veg. than with Copernicia.

Much recent burning through all this country.

Many flat topped or umbrella crowned trees, but not very tall.

Then more typical Curatella savanna but with fairly large trees. This gradually closes to open scrub forest and even locally closed scrub forest.

Ravines have gallery forest.

Much more Copernicia savanna.

Then deciduous or semi-deciduous open forest and thicket. Palms (Copernicia) scattered irregularly in this. When in "palm savanna" the ~~of~~ Copernicia seem to be much more even in height than when in other vegetation.

Forest tends to be more deciduous and bare.

Then extensive open Copernicia + grass savanna. One area seen where all palms were under 1 m. tall.

Stop E of Yaguajay, east of Santa Maria
P de Mina for photos of extensive Copernicia savana on gently rolling land, very extensive. Not much but grass under the palms.

Then ~~good~~ deciduous forest. 15 m. tall, open to closed. patches of thorn forest or scrub. Patches greener than others.

Taguapire – Deciduous forest, more or less thorny. Copernicia seeds. The Copernicia shows various narrowing on the trunk. See Vareschi paper.

Sta Maria de Ipire.

A good bit of cleared land, burned areas. Irregular deciduous scrub between. This locally thins out to form savanna, which then becomes locally savanna, locally dense to form thicket.

This gets ~~[illegible]~~ green again, ~~[illegible]~~ and then thins out becomes mixed deciduous forest ~~of [illegible] many deciduous~~ ~~[illegible]~~ In it a ~~[illegible]~~ number of small ~~[illegible]~~ ~~[illegible]~~ desiccating pools. Gradual change to a very "patchy" savanna with dry grass, palms, ~~[illegible]~~ most of ~~[illegible]~~ the savanna bushes and trees ~~[illegible]~~ deciduous. These get farther apart – grass between, then closer together until a ~~[illegible]~~ a layer is formed, ~~[illegible]~~ becoming more and more continuous until there is a continuous, locally open, ~~[illegible]~~ deciduous scrub.

Islets increase till it is good deciduous forest. Then there is a large area of grassland on its side. Then a mosaic of savannas or thorn savanna and deciduous forest, then a mostly savanna landscape, on rather rolling ground, then more thorn scrub, closed.

Valle de la Pascua.

Some cultivation. Then mosaic of deciduous forest and cleared land that assumes character of savanna. Stumps still remain on some of it. This seems to be a broad strip on both sides of road, and extends a good distance. Mesophyllous thorn scrub may come in when deciduous forest is destroyed. The deciduous forest varies from open to closed, is about 10-15 m. tall, has a shrub layer some m. tall, also deciduous.

Then fairly extensive deciduous scrub. Has been burned recently in many places. Scattered Copernicia in it. Considerable clearing and burning. Some trees scattered ~~in~~ scrub areas.

Then grass with a few scattered trees in flat low ground, deciduous forest on hills & escarpment, at Picapica. This is south of road. Thorn scrub north of it. Doubtless an old clearing.

Then thorn scrub on both sides. A picturesque arborescent Cereus appears locally. Then areas of Copernicia savanna surrounded by thorn scrub and thickets.

Some low hills and much cleared and burned land.

Then rather extensive grassy clearings. Some open thorn scrub and closed deciduous forest.

Chagua rama.

Mosaic of deciduous forest and clearings.

Then semi-open thorn scrub with scattered large, mostly deciduous trees. These locally more abundant. & locally large clearings. Some of these invaded extensively by Calotropis.

More clearing than forest.

P Then a large fire on left side. Photos. Severe enough that few smaller plants could survive, but ~~trees~~ the scattered trees probably not damaged.

On other side a bunch-grass pasture of Panicum maximum, with some palms & a few other trees. Along the road are ~~[illegible]~~ clearings, mostly recently burned, but beyond a ~~[illegible]~~ couple of hundred m. deciduous scrub & forest. In places reaching road. More and more along road. Generally the scrub is 2-3 m tall, closed, with scattered trees. The cleared strip along the road is a frequent feature. Burned clearings with stumps are common. Patches of good forest with flat topped trees about 10 m. are common. The other phases appear to be degraded from this, or in succession back to it from clearing, if not actually cultivated or managed as pasture.

Then some low rolling hills, mostly cleared but with patches of desiduous forest. The cleared part in grass with scattered trees.

Much burned land.

Then flat grassland with scattered flat topped trees on one side of road, tall scrub with similar scattered trees on other — all deciduous. Cattle grazing in the grassland. Several ponds.

Then, on other side, much burned land. On south side guinea grass pasture.

Broad burned strip on each side.

Patches of taller forest, tending to be evergreen — really gallery forest along ravines. But some fairly tall deciduous forest in small patches.

Much tall thorn scrub, scattered trees and patches of forest, burned areas and clearings. The thorn forest begins to show a tinge of green.

Large areas of mixed thorn scrub and deciduous

forest.

From small rise it appears that the deciduous forest characterized by a very gray brown color, extends a long way in all directions.

This varies in density and proportion of trees to shrubs — shrubs form a 3-4 m. story generally, closed. The trees may be 10-12 m. tall. Some Copernicia scattered in it.

We seem to be gradually climbing, but this may be an illusion.

On top of a long rise this tends to thin out and become more open, though otherwise not changing much.

Thickens up again, with a few more green trees in it. Palms are fairly common.

Locally the forest looks about half evergreen. Many rather open areas.

On the east side of a low range of hills the evergreen elements seemed to increase in proportion, but from top, the forest as far as we could see is bare.

For a good distance the

vegetation is rather
irregular and thickety.
Then on right a vast
cleared and burned area
with scattered trees mostly
Capparis (?) and Copernicia,
with grass on unburned
portions.
Then some forest again; but
entire aspect - forest, trees in
savanna, etc. has become
green. Gallery forest along
Rio Guárico
at El Sombrero.
Turned south here.
Cleared land and semi-
deciduous thickets. Scattered
tall evergreen trees in cleared
~~dry~~ land. This is essentially
bottom-land.
Copernicia very common
locally. The scrub & thicket
as well as trees here are
green.
As we came up out of bottom
land, there is extensive cleared
land - grassy with scattered
trees. The trees are ~~sp~~
mostly umbrella shape, medium
height. On dissected but
rounded escarpment there are
almost continuous thickets,
all green.
Then on top of this a semi-

deciduous ~~woodland~~ open to closed
thickety forest. Then a
savanna that approaches
open forest. This semi-deciduous.
La Encruciada.
Savanna with abundant
trees. Then rounded
gravel hills with semi-
deciduous scrub, then
areas of open scrub & savanna.
Thorny. Scattered flat
topped trees in scrub.
Copernicia common.
Shrub-savanna to open scrub.
The commonest shrub in
all this appears to be a
microphyllous Acacia.
Now a larger leafed green
open scrub alternating
with savanna. Now
Byrsonima and some Curatella,
also Bowdichia. Savanna
and patches of "mata".
Savanna with trees
to 8 m tall or more; thick
grass where not recently
burned.
This merges into an open
never closed and tangled
scrub forest.
Then open savanna with
scattered large shrubs
and small trees, irregularly
distributed.

Then some cultivation and more open savanna.
Ravines and dissected land are forested.
More open scrub; then savanna.
We seem to be following a flat topped wide ridge between two dissected, wooded areas. On top this varies from scrub to savanna, to palm savanna, to grassland. Palms mostly very short.
Broadens out into an extensive open savanna. Curatella - Byrsonima of all sizes. ~~[illegible]~~ Trees and shrubs become very scarce except Copernicia which becomes very common.
Then small patches of scrub. Then large areas of grass with small Byrsonima. Patches of larger ones.
Woody plants become very sparse exc. local areas of palms. On right a more wooded area slopes down to the reservoir. On left irregular rather clumped trees and shrubs in grass.
Rather irregular savanna continues for some distance

much laterite locally on surface.
Stopped - the laterite is largely a semi-vesicular mass, but has quartz, sandstone, and other pebbles cemented in it. The exposed part is badly weathered. surface is black.
Byrsonima verbascifolia common here.

1964 Venezuela

May 17 – west of Pariaguan.
Est. Guárico
in savanna of Hyparrhenia
and several species of trees
on flat hard ground

45281 3 Roupala intricata
common

2 82 Roupala intricata
common

1 83 Bowditchia
common

3 84 Byrsonima coccolobaefolia
common

1 85 Hyparrhenia rufa
dominant in grassy areas

May 17 east of Taguapire,
east of Santa Maria de Ipire
roadside in savanna

2 86 Helicteres
common

May 17 just west of Chaguaramas
Est. Guárico

on weedy roadside in dry forest area

1 87 (malv.) HERISSANTHA/crispa (L.) Briz. det
rare

2 88 Tephrosia cinerea L.
common

tree 5 m. tall, leaves stiff

young sprouts from stump,
— sterile.
small tree; sterile.

small tree, petals pinkish

small tufts, culms
arching, to 1 m. tall.

shrub 1.5 m. tall,
corollas scarlet, tubular.

Fryxell 1977 herb 1 m. tall, much branched,
— flowers pale pink.
flowers purplish.

May 17 n. e. of Calabozo
in savanna

45289 (Annon.)
1 in bit of woods
3 90 Byrsonima verbascifolia
common locally

May 18 – Proyecto Guárico,
s. of Calabozo
weeds around farmyard

1 91 Paspalum
2 92 Amaranthus dubius Mart.
2 93 Sida ?
abundant
1 93a ~~Ludwigia~~ – Aeschynomene evenia C. Wright. petals yellow small.
1 94 Portulaca oleracea L.
common
1 95 Spermacoce verticillata
common
1 96 Euphorbia
abundant
1 97 Turnera

1 98 Heliotropium cf. ovalifolium
occasional

same in rice field, shaded by rice
1 99 Ludwigia
45300 Echinochloa colonum (L.) Link
1 abundant
2 01
1 02 Leptochloa

(To p. 86

(L.) Rich. sprouts from woody
root crowns; flowers yellow.

– culms erect.
– erect, spike somewhat nodding.
sprawling sparsely
branched herb, flowers
– white to pale pink.
spreading fleshy herb,
flowers open at 10 a. m. petal
yellow, notched stamens few.
– flowers white.
Plants erect or ascending

flowers yellow; stems
– many from root crown.
fls. white.

– petals pink-purple.
very strictly erect.

– flowers yellow.
panicle purplish.

1964 Venezuela

May 18 – bus trip Calabozo south to San Fernando de Apure.
Curatella – Byrsonima savanna just out of town. Then gallery forest where we crossed a river. Rice fields ~~[illegible]~~ over a very large area. Trees around dwellings and scattered elsewhere locally. Large irrigation canal; with marshy spots and ponds along road with Typha, etc.
One fork of canal follows road, the other two at right angles. Rice seems in all stages, from fallow to headed out. 100-125 days for maturity planting from mid-December to May

Weeds
Heliotropium indicum
Cleome spinosa
Scoparia dulcis

Reason for only 1 crop a year is that between crops they put cattle on the land to control the weeds.

Borreria verticillata
Sida sp. (white & pinkish fl.)
Euphorbia cf. glomerifera
Portulaca ~~[illegible]~~
Sida acuta
Phaseolus lathyroides
Eclipta alba
Heliotropium ovalifolium ~~[illegible]~~

Cynodon dactylon
Alternanthera procumbens
Malachra cf. alceifolia
Aeschynomene
Turnera sp.
Cyperus sp
Paspalum
Amaranthus

These all in barnyard.

p. In rice fields proper – B & W photos.
Echinochloa cf colonum is principal weed.
There are many weeds along margins and in ditches
Cassia tora! (long pod)
Eclipta
Euphorbia cf glom.
Cyperus spp.
Ludwigia (suffrut.)
Hyparrhenia rufa
Scoparia

Rice is harvested while straw is still green. The machine chops the straw and it is left in the field. Cattle are turned in after harvest.

Poles from Copernicia are used abundantly in construction.

17000 hectares in rice. Guarico Project project much more.

On south - some large trees, round crowns, low branches scattered in fields. Delonix in full bloom. Large trees more abundant southward groves also. Cultivation less intense Other crops than rice locally. Much more fallow rice land to south. Much newly plowed land.

Then canal turned left. Beyond this rice on left, cleared land or it other crops for a short distance. Then pasture, thicket and palm savanna.

Stopped just south of limit of cultivation in an irregularly thickety vegetation trees to 15 m. in an open forest arrangement but with thickets Tangled with scramblers and with grassy openings. Copernicia common, often with strangling figs. Soil fine, dense, cracked in blocks.

P
b + w
brd.

Guazuma common.
Caesalpinia coriaria.
Randia spp.
Degaesia (comm)
Pterocarpus

Ardisia
Pterocarpus

Immediately south is Byrsonima savanna very open, small bushes only, short grass. rolling terrain. occasional thickets.

Then some cleared land. Open forest of Byrsonima adjacent.

More clearing.

Some open grassland, some savanna of palms and deciduous shrubs & small trees, some tangled open to closed scrub. Mostly irregular savanna.

Then more irregular thickets and openings.

Many cattle everywhere. ~~crocodile~~

Small farms.

All along this road are ponds ~~are~~ accompanying borrow pits. Many small crocodiles.

Scattered small patches of palm savanna. Then fairly general palm savanna with thickets locally.

Open desiccated low ground with thin grass & scattered trees, some palms.

Thickety savanna, local patches of closed tangled scrub forest, prob. deciduous.

Large open areas of very short grass, with patches of scrub, scattered palms locally, what appears to be gallery forest to left at varying distance.

Then savanna of palms and ~~[illegible]~~ microphyllous shrubs. Becomes taller and thicker.

Palms locally very abundant. Patches of tangled scrub forest! Deciduous. ~~[illegible]~~ Palms very abundant.

Irregular patchy savanna, fairly large trees.

~~Be~~ Becomes open - large areas of grass with few bushes - forest (?) in distance. Some patches of trees, but very large areas without any. Very short grass.

Then patches of palm. Continuous palm savanna. rather irregular, locally with, locally without other trees.

P. Several b+w photos.

A bit farther south a stop on border bet. palm savanna and esteros. (submerged areas during ~~[illegible]~~ wet season) no woody veg.

The estero soil is deeply cracked, mostly bare but with ~~[illegible]~~ very open mat of ~~[illegible]~~ Mimosa sp.? + two or three other very prostrate species (Vincetoxicum ?, ~~[illegible]~~ ?) and with widely spaced Heliotropium indicum giving the character to the landscape. Slight irregularities in ground.

No essential difference in edge of palm grove except surface more irregular.

Several seedling palms in cracks.

On other side of road palms are about evenly distributed from rosettes to 7 m. tall +, spaced from 3 to 8 m apart.

A few spiny shrubs and many mostly dry herbs covering a good part of the ground. Ground very rugose with cattle tracks.

South the estero is on both sides, but as Camaguan ~~San Fernando~~ is approached F Landscape becomes shrubby and with scattered trees + cult.

Then more low lying land but with scattered trees, grassy, some grassy and without trees. This much disturbed, many small farms. Many shallow ponds.

Then an extensive green grassy landscape mostly open but a few trees and with what appears to be gallery forest in distance. The grass appears to be a coarse thing like Panicum maximum but eaten down to tufts 1-3 dm. tall. Many ponds locally.

Then thickets and palm groves appear, esp. near road.

Great flocks of egrets and scarlet ibis in a pond along road.

One pond covered by Salvinia.

Then closed scrub forest with abundant Copernicia. Then open green grass.

Ponds with Eichhornia in flower.

Gallery forest in distance to rt.

Another pond with

hundreds of egrets, some ibis, many anhingas.

Patches of palms & of thickets. Open grass with trees.

Rio Apure:

Large areas of apparently cleared bottom-land with large trees, grassy areas, cult. fields, etc.

Thespesia planted as an ornamental at club.

Dense low tangled forest along a dry channel.

Road from San Fernando to San Juan de Payara.

Cult. fields! Commonest plant is Ipomoea crassicaulis, Prosopis, Guazuma, Licania, many broad-leaf trees.

Land is largely cult. except for depressions. Many large trees, tangled fence rows, wooded channel banks, etc.; general aspect is wooded. Bananas. Many thickets. These become more dominant. Large samanes abundant.

Patches of dense closed

forest called "calcetas". Most abundant plant in fields is I. crassicaulis called "caligonia".

The thickets tend to become micro-phyllous. A [illegible] Cactus. Much open ground. The ground here is deeply cracked.

"Calceta" = very tangled closed forest with an abundance of ~~[illegible]~~ lianas

Entire area inundated in wet season. Roads on levees.

Inside of calcetas not impenetrable, but edges seem so. Locally very dense and difficult.

Seems to be just dense secondary thicket following abandonment after cultivation.

Erythrina Licania
Coccoloba,
P~~[illegible]~~

Just outside is a well with water about ~~[illegible]~~ 3-4 m down, in fine grained soil. Cleared fields.
Pereskia used as living fence.

at edge of forest is an area of loose, stiff slender shrubs. Ground cracked. Eupatorium odoratum common.

Large areas completely open - low hard cracked soil, dominated at this season by Ipomoea crassicaulis - said to be inundated 6-7 mo. per yr.
Wooded areas dense and tangled, crossed by channels, now mostly dry. The open ground seems slightly lower.

North of Rio Apure are dense palm forests thinning out to palm savannas. Then more palm forests. Stumps show that large areas of this have been cut. A small fenced patch of forest ~~[illegible]~~ is burning fiercely. Patches of calceta, and cult. fields.

North ~~[illegible]~~ Camaguan several ponds with literally hundreds of egrets, a few scarlet ibises, avocets, etc. eating small fish trapped in the ponds.

much burning going on here.

Many of the ponds ~~[illegible]~~ have no vegetation around margins. Why?

~~Cha~~ Camaguey.

Turned east on dirt road. Weedy pasture with scattered large ~~oaks~~ trees on left, thickets on right, then pasture on rt. also.

1964 Venezuela

May 18 - just s. of Proyecto Guárico, s. of Calabozo in open, tangled scrub forest and thicket.

45303 Ardisia
occasional

1 04 Randia
occasional

3 05 Randia
common

May 19 - north end of Estero de ~~Camaguan~~ Camaguán just north of Camaguán in bare desiccated bed of seasonal lake.

1 06 Trichospira verticillata (L.) Baker - det. H. E. Robinson, 1974.
rare

2 07 Heliotropium indicum L.
abundant, dominant

1 08 Heliotropium ovalifolium
rare

1 09 Mimosa
abundant, forming a discontinuous mat

1 10 Mimosa
occasional

1 11 Hydrolea
rare

Est. Guárico

small tree, ripe fruit red.

sterile shrub, branches in one plane.

tangled semi-scandent shrub, branches very stiff, decussate.

prostrate

erect, much branched, to 0.3 m. tall, flowers lavender.

fls. white, plant erect

prostrate, sterile. very sensitive.

almost prostrate, very sensitive, sterile.

prostrate.

1944 Venezuela

May 18 - near La Guama 2 km. of
San Fernando de Apure, on
road to San Juan de Payara

in ~~this~~ tangled ~~of~~ secondary
forest called "calcetas"

45312 bignon. Tanaecium crucigerum Seem.
4 ~~liana~~ det. A. Gentry 1974

3 13 Pereskia ~~R.~~ guamacho det. Steyermark 1980
planted in clearing

same - in area of
~~sparse~~ open scrub
at edge of forest
called "calcetas".

1 14
1 15 Copaifera ~~Connarus~~ Connarus
common det. Steyermark 1980
3 16 Copaifera Connarus, det. Steyermark, 1980
common
1 17 (flac.?) Psidium det. Steyermark 1980
common
3 18 (flac.) Hecatostemon guazumaefolius (HBK) Sleumer
common det. Steyermark 1980
4 19 Pithecellobium lanceolatum (H.&B.) Benth.
occasional
3 20 Paullinia
occasional
1 21 Cordia
abundant

Est. Apure

liana, ~~flowers~~ corollas white
falling readily.
buds zygomorphic,
pointed.
— small fleshy tree,
almost spineless.

— Tree
— shrub fls. whitish
fruits pendent, red.
— shrub 1.3 m. tall,
fruit orange red.

— shrub 1.5 m. tall,
flowers whitish

shrub ~~1.5~~ 2.5 m. tall
flowers whitish.
— vine, flowers white.

shrub 1-1.5 m. tall.

1964 Venezuela

May 19

Estacion Biologica de la Sociedad de Historia Natural de Venezuela

Herbarium of several hundred sheets from Calabozo Region in good covers

Pit in typical savanna shows a layer of fine soil a few cm thick, changing to a thick layer of irregular laterite pebbles. A Curatella plant about 2 cm diam at ground, has a vertical tap root reaching at least 1 m, tortuously bet. pebbles. Branching somewhat in soil layer.

A large tree [illegible] enormous superficial root system, reaching as much as 15 m from trunk. The vertical roots are not too well developed, said to be because of gravel layer. but behavior in sand should be checked.

Burned area has tufts averaging 1-2 dm. apart. Immediately adjacent unburned grass is closed, continuous, 1-2 dm. tall.

Considerable accumulation of pebbles on surface. Large blocks of lateritic conglomerate protruding where surface slopes a little, some blocks well buried in surface of the gravel layer.

Geol. maps give age of material as Pleistocene but van der Hammen says prob. lower Pleistocene or lower. Much evidence of surface erosion and deposition. Little contour windrows of dead grass fragments suggest sheet flow of runoff.

P "Matas" occupy depressions in arrecife surface, filled with soil. Mixed non-savanna shrubs & trees. photos

One very large one mata is on an ordinary profile, without the depression. This one includes Curatella & Bowdichia suggesting that the Mata has spread over an area of savanna when protected from fire. Periphery of Byrsonima, Curatella, Cochlospermum, Guettarda, Cordia, Lonchocarpus, etc. Eugenia as [illegible]. The grass is 3+ dm. tall outside this but it stops abruptly at the edge of the mata.

In the savanna nearly each Curatella, Byrsonima tree is an incipient mata, with ~~[illegible]~~ ~~[illegible]~~ seedling of various species surrounding it. Has been protected from fire 3 or 4 years. Grass is dense, to 3-4 dm. tall, tangled.

Locally the gravel layer dips down some m. and is covered by a mottled clay that is wet a few feet down even in the end of the dry season. This sort of site marked by Vochysia venezuelana in the matas.

P

Photos [illegible] of [illegible] bet burned + unburned savanna.

P

photos of Curatella tree of comparable size in unburned and burned savanna

In burned
- Byrsonima
- Psidium
- Eugenia
- Cordia
- Alibertia

and others sprouting but not identifiable

Unburned
- Eugenia
- Byrsonima
- Cordia
- Casearia
- Guettarda
- Mimosa
- Annona
- Smilax
- Unident legum
- Bowditchia
- Cochlospermum
- Cassia

1964 Venezuela

May 19 – trip by bus Calabozo to Maracay.

North of Calabozo Curatella – Byrsonima – Bowditchia savanna. Then along the dam across Rio Guarico – below dam is thorn forest some in valley bottom. Above is a great reservoir, in which are large areas of still standing dead trees. Below dam several ponds surrounded by Typha marsh. Reservoir is down about 4 m. from high water. The ponds below dam are borrow pits from which the material for the dam was taken. Some of this area is savanna, some with Copernicia + acacia or Prosopis. Some Curatella – Byrsonima savanna almost closed, other with rather closely spaced small trees.

Beyond w. end of dam is thick Curatella, perhaps open scrub rather than savanna.

Then open forest to savanna of Bowditchia, Curatella, Byrsonima, etc. rather short grass?

Landscape of well developed trees, to 5 m. tall or more, varies from savanna to

open, locally closed, forest. Then open Byrsonima – Curatella savanna. Grass grazed very short. Trees to 5–6 m. tall. Uniform over a long distance, locally thicker, even thickets tangled with vines.

After some distance closed forest becomes general except where cleared. Some regrowth from clearings. Then this forest becomes lower and more microphyllous.

Hato El Corozo.

Then taller again. closed, and tangled with vines.

Low thorn scrub. Then grass with scattered Copernicia. Locally the palms are absent. Locally spots of scrub.

Terrain becomes gently rolling and thorn scrub is the vegetation, open to closed.

Then mosaic of thorny scrub and grass, with or without Copernicia. Large area recently burned. The Copernicia leaves killed but new ones appearing.

Mixture of deciduous thorn scrub and Copernicia, less Copernicia ~~[illegible]~~ in places, esp. where there are tall trees.

Trees become larger, except

where burned.

Then a great extent of open to closed, irregular scrub, much of it recently burned. Some areas of it with Copernicia.

All of this scrub and most of forest seems to be deciduous but well on toward being leafed out.

Then rather well developed closed microphyll forest, lower, more irregular in places. Locally openings with Copernicia.

Then thorn shrub savanna.

Then open forest with tall dry weeds. Trees get taller, to 10 + 12 m.

Going down a very long gentle slope and the forest gets more general, more microphyllous, then lower.

Rougher land on other side generally forested with deciduous microphyllous trees. This runs up to some low rocky ridges with open forest

On other side a rather broad valley with micro-

phyllous forest.

P Bcc photos of this forest on ridge and in valley.

Must be north of Monocaya.

Ridge on other side has savanna or desert on steep slopes. Much rock showing

Open forest on basal slope.

Another valley with irregular forest-scrub mixture. Palms locally.

Dos Caminos.

Deciduous forest and scrub forest rather microphyllous.

Hilly country, covered by rather irregular micro-phyllous deciduous forest.

All of this forest, from Calabozo, has been green, but undoubtedly deciduous.

Now it is less green, locally bare.

Locally it is open and grassy.

Ortiz.

Valley with some flat areas which are cultivated. Otherwise with deciduous forest + scrub, locally thorn scrub.

Becomes more and more bare of leaves as terrain becomes more hilly. Some hills bare and grassy or partly sp.

Parapara – hills are mostly grassy and brown, with or without scattered trees.

Broad flat valley has open deciduous scrub or scrub-forest.

Hills now covered by open decid. forest, closed in valley and ravines. Stream in valley dry.

Hills vary from open forest to savanna dense in ravines.

Then, hills ~~to left~~ show typical Curatella savanna, varying to grass without trees, valley scrub forest, partly cleared for cultivation.

El Manguito

Climbing along a ravine, wooded in bottom, savanna on both slopes.

Becomes more brushy toward top.

Fundo La Arreceta

Los Flores.

Upper slopes degraded and brushy, eroded. Wooded in ravines.

Brush on these slopes is

tangled with a great mass of [illegible] herbaceous vines now completely dry.

San Juan de los Morros.

From here to Villa de Cura [illegible] same road as described on pp.

Spectacular limestone pinnacles and crags.

Tangled scrub and cultivation

Limestone hills thickly wooded on upper slopes, shifting cult. on lower.

Flat land in valley cult. except narrow gallery on river banks. A little water in river.

Not sure that these peaks are limestone – have the appearance also of remnants of a great igneous dike – very straight sides, arranged in a row.

Hills now savanna covered, or bare. flat valley bare, ravines wooded.

Villa de Cura.

Rd to San Francisco de Asis. a rough dirt rd. thru cultivation – maize, cane, etc.

No, this merely led back to highway to

S. F. de Asis. Follows valley bet. hills covered with Curatella savanna.

San Francisco de Asis.

Hills to left are grassy with strings of woods in ravines, anastomosing below in wooded gulches.

Came out onto plain, mostly cane plantation.

Lower slopes deciduous forest.

Fields separated from road by hedgerows of small trees. Some fields are fallow, also lined by trees.

Cuesta Negra.

Large trees line road to Maracay.

Large vineyard on left, probably of Passiflora, strung upon wires.

Small ravine beyond Palo Negro.

Fallow fields with scattered large Samanea.

Camburito

Santa Rita

Extensive fallow fields. Some plowed

El Guarito

Broad dome shaped Samanea are the outstanding feature of the landscape.

1964 Venezuela

May 19 - Estacion Biologica, Reserve, near Calabozo,
small island of forest
in ~~Curatella~~ savanna.

45322 Guettarda elliptica Sw.
2 one of commonest plants in
2 23 Randia
occasional in
2 24 Guettarda elliptica Sw.
one of commonest plants in
2 25 ~~Casearia~~ Erythroxylon det. Steyermark, 1980
occasional in edge of
2 26 Cordia chacoensis Chodat
occasional just outside of
1 27 (rub.) Genipa sp. det. Kirkbride, 1977
under Curatella tree in
savanna

same - in small clump of
trees on deep compact
mottled soil in savanna
3 28 Smilax
2 29 Vochysia venezuelana Stafleu
said to be indicative of
this soil type
3 30 Xylopia aromatica (Lam.) Mart.
occasional

same - in small clumps of scrub in savanna
2 31 Eugenia
very common in clumps
of scrub or forest in
savanna
1 32 Annona chirimolia L.
occasional

Est. Guárico

shrub 3 m. tall.

shrub 2 m. tall.

shrub 2 m. tall,
fruit dry.

— shrub 1.5 m. tall; fruit immature.

shrub 1 m. tall; flowers white.

sterile small plant.

— vine climbing in bushes
sterile tree 8 m. tall,
leaves glossy above,
yellow green.

— slender shrub, sparsely
branched 4 m. tall; flowers
white, fading yellowish.

— shrub, aromatic when
broken.

shrub 1 m. tall.

1944 Venezuela

45333 Sida
occasional
1 34 Casearia
occasional

May 19 - San Juan de los Morros, Est. Guárico
1 35 Lippia

May 19 - near Palo negro,
Lago de Valencia, Est. aragua
roadside
1 36 Heliotropium parviflorum

3 37 Boerhavia diffusa L.
common in

May 19 - Estacion Biologico
Reserve, near Calabozo, Est. Guárico
3 38 Casearia
in clump of scrub in
savanna

---

suffrutescent herb 1 m. tall.
— strongly aromatic.
shrub 1 m. tall; fruit
immature.

flowers pale pinkish with
yellow centers.

much branched
suffrutescent herb.
— flowers whit.
stems prostrate,
forming a loose mat,
inflorescence ascending.

shrub 1.5 m. tall, fruits green,
turning black.

1934 Puerto Rico

May 22 – air trip Caracas–New York

South coast of Puerto Rico ~~25~~ 30 mi. e. of Ponce.
A lagoon surrounded by a festoon of islets. On shore a mangrove swamp with tidal channels. Inland from this a patchwork of cultivated fields.
Inland from this and extending across the island ~~an~~ an intricate pattern of hills, mostly cleared, but having perhaps 15–20 % of wood remaining.
On north side a broad coastal plain in sugar cane, but with patches of mogotes in it.

1964 Virginia

May 27 - Great Falls,
Potomac River
in rocky area at edge
of second-growth woods

45339 Stipa
3 very local
2 40 Senecio
local
1 41 Krigia virginica
very local in rock crevices
1 42 Euonymus americana
occasional

same - in woods
2 43 Ilex
rare
5 44 Ptelea trifoliata
common
1 45 Euphorbia
common
1 46 Tradescantia virginica
occasional in shade

Fairfax Co.

caespitose, spikelets
— deep purple.
flowers deep yellow

shrub to 2 m. tall,
flowers slightly tinged
light green.

shrub 2.5 m. tall,
— flowers white.
shrub, flowers pale
green, ill-scented.

roots fleshy, yellow;
flowers curved downward.

1964 Virginia

May 31 – Alexander Berger Memorial Sanctuary

Plants seen

Fagus grandifolia
Lindera benzoin
Ilex opaca
Mitchella repens
Rhus toxicodendron
Lonicera japonica
Botrychium virginianum
Liquidambar styraciflua
Galium triflorum
Chionanthus virginicus
Smilax rotundifolia
Podophyllum peltatum
Woodwardia virginica
Arisaema triphyllum
Lonicera japonica
Athyrium filix-femina f. rubellum
Carpinus caroliniana
Acer rubrum
Liriodendron tulipifera
Sambucus canadensis
Rubus cf. argutus
Symplocarpus foetidus
Circaea quadrisulcata
Platanus occidentalis
Ranunculus
Botrychium dissectum
Polystichum acrostichoides
Quercus phellos
Parthenocissus quinquefolia
Robinia pseudoacacia

Gleditsia triacanthos
Kalmia latifolia
Corylus americanus ~~cornuta~~ (~~[illegible]~~)
Rhododendron roseum
Saururus cernuus
Carex
Fraxinus americana
Acer negundo
Viburnum dentatum
Osmunda cinnamomea
Ilex verticillata
Pilea
Asimina ~~lobata~~ triloba
Lilium
Quercus falcata
← Campsis radicans
Vitis labrusca
Peltandra virginica
Cornus amomum
Boehmeria
Polygonum sagittatum
Asarum virginicum
Juncus effusus
Betula nigra
Krigia virginica
Stellaria media

Hooded warbler
redstart
pileated woodpecker
~~[illegible]~~

raccoon
box tortoise

Shrub layer on steep north facing wall of ravine covered with Rhododendron maximum, some Kalmia. practically nothing on ground.

Flat bottom of ravine dominated, in shrub layer, by Lindera & much Carpinus. Sambucus. On ground Symplocarpus, Circaea, Podophyllum, Rhus tox. Athyrium, Arisaema, Parthenocissus Impatiens, Pilea, Dennstaedtia

Lower down the ground layer becomes very sparse.

Streams of brown water on clean beds of fine gravel.

This is a large dried beaver impoundment. a bit lower down is an opening with several very large fallen Betula nigra. Below this a thicket of small Betula nigra. Then a large beaver dam.

The meadow is very lush, with grass about 50 cm tall, mostly Bromus & Agrostis (in flower)

Plants in meadow

a	Bromus
c	Agrostis alba
c	Ranunculus
c	Trifolium repens
c	Geranium
c	Trifolium v
a	Glechoma
c	Plantago virginica
c	Festuca elatior
o	Plantago rugelii
o	Myosotis
c	Cerastium
o	Viola
o	Erigeron annuus
c	Bromus
r	Taraxacum vulgare
la	Rumex acetosella
o	Duchesnea indica
o	Vicia
c	Oxalis
~~o~~c	Rumex crispus
o	Rumex obtusifolius
c	Juncus
c	Rubus
r	Trifolium pratense
r	Chrysanthemum leucanthemum
lc	Allium vineale

Around the beaver pond is a fringe of Sambucus. The water is high and the dam is in good repair.

On low broad ridge between pond and meadow is open wood.

Rosa multiflora.
Alternaria
Glechoma
Ranunculus

o	Ambrosia artemisiifolia
l	Conium maculatum
lc	Cirsium lanceolatum
lc	Juncus effusus
r	Lepidium virginicum
r	Lactuca
l	Triodanis biflora
r	Lactuca scariola

1964 Virginia

May 31 - Belvedere Peony Farm,
Rappahannock River 5 mi.
below Fredericksburg

45347 Geranium molle L.
1 local in grassy corner of field

May 31 - Alexander Berger
Memorial Sanctuary,
Rappahannock River, 5 miles
below Fredericksburg
in bottomland meadow

3 48 Fraxinus tomentosa Michx. f.
occasional isolated tree
2 49 Rumex crispus L.
occasional
3 50 Achillea millefolium L.
occasional
3 51 Diospyros virginiana
occasional isolated tree
1 52 Lepidium virginicum L.
common in thinner places
1 53 Vicia angustifolia var. segetalis (Thuill.) W.D.J. Koch
occasional
1 54 Lithospermum arvense L.
rare
1 55 fungus
common on Rubus sp.
3 56 Erigeron annuus L.
occasional
2 57 Rumex acetosella L.
locally abundant,
forming large patches
1 58 Carex
occasional

Spottsylvania Co.

flowers rose-purple.

small tree

erect

rays white; plant
aromatic.
small tree 8 m. tall,
flowers white, waxy.
erect. flowers whitish.

ascending; flowers
magenta.
erect, branched.

bright orange

rays white.

flowers reddish yellow.

culms solitary,
ascending.

1964 Virginia

3 45359 Salvia lyrata
locally common
1 60 Trifolium repens L.
common
1 61 Plantago lanceolata L.
occasional
1 62 Juncus tenuis Willd.
occasional
2 63 Rumex obtusifolius
occasional
1 64 Plantago virginiana
common
2 65 Ranunculus bulbosus L.
common
1 66 Cerastium semidecandrum L.
common
1 67 Poa
common
1 68 ~~Glecta~~ Glecoma hederacea
very common
2 69 Bromus japonicus
abundant, dominant plant
2 70 Bromus
common
1 71 Veronica peregrina
common
1 72 Myosotis verna Nutt.
common locally
2 73 Poa
abundant
1 74 Geranium carolinianum L.
var. confertum Fern.
very common
2 75 Oxalis stricta L.
common

Spottsylvania Co.

flowers white.

1 45364a Trifolium flowers yellow

petals yellow.

erect

prostrate; flowers purple.

erect

1964 Virginia

~~45373~~ same - in sandy areas
45374 Oenothera laciniata
common locally
~~77~~

same - edge of beaver
pond, wet ground
1 77 Carex lurida
common
1 78 Juncus effusus L.
common
2 79 Sisyrinchium
common

May 31 - Alexander Berger
Memorial Sanctuary

lower Snow Creek
on bottom-land flats
1 80 Stellaria media
common
3 81 Viola
common locally
1 82 Fraxinus cf. tomentosa Michx. f.
common
1 83 Duchesnea indica
occasional
1 84 Triodanis ~~biflora~~ perfoliata
rare
1 85 Asimina triloba
occasional
1 86 Viburnum prunifolium
occasional
2 87 Ranunculus abortivus
occasional.

Spotsylvania Co.

flowers yellow, turning
reddish.

caespitose.

flowers blue-violet;
roots yellow.

forming loose mats.

stems erect

very tall tree

prostrate; fruit red, fleshy

flowers deep violet.

shrub 3 m. tall (others
much taller), sterile.
shrub; fruit green.

1944 Virginia

Spottsylvania Co.

4	45388	Carex local	Tufted, culms weak,
2	89	Onoclea sensibilis rare	sterile.
2	90	Festuca obtusa occasional	~~culm~~ culms weakly ascending
1	91	Allium vineale L. ? rare	leaves strongly compressed, with sharp edges.
1	92	Epifagus virginianus rare, under beech tree	dry, last year's plant.
2	93	Festuca local, on mossy bank	
2	94	Peltandra virginica (L.) Schott & Endl. occasional	erect; ~~[illegible]~~ spathe green, ill-scented.
2	95	Acer negundo L. common	small tree (others larger) inflorescence pendent.
1	96	Vitis labrusca ? local	sterile vine.
2	97	Viburnum recognitum Fern. common	shrub 2 m tall.
1	98	Cornus amomum Mill. occasional	sprawling to ascending shrub; buds only.
1	99	Corydalus flavulus occasional	
3	45400	Viola rafinesquii local	stems weakly ascending to procumbent.
1	400a	Krigia virginica rare in opening	
		same – on lower part of steep north slope in woods.	
5	01	Kalmia latifolia at base of slope in very wet ground	shrub 2 m. tall; flowers white.
3	02	Leucothoe racemosa local	shrub 1 m. tall

1964 Virginia

45403 Rhododendron maximum
4 locally dominant

same — in flat ravine
bottom in dense woods
1 04 Corylus americana Walt.
occasional
1 05 Ranunculus
in wet ground
1 06 (grass)
rare
2 07 Lindera benzoin
dominant in shrub layer
3 08 Ilex verticillata
rare in shrub layer
1 09 Ilex opaca L.
common
1 10 Galium aparine
rare
2 11 Botrychium virginianum L.
occasional
1 12 Botrychium dissectum f. obtusifolium
rare
1 13 Ranunculus
rare
1 14 fungus
on Podophyllum peltatum
1 15 Carex
in wet spot
1 16 Platanus occidentalis
occasional
1 17 Sambucus canadensis
rare in small opening
1 18 Rubus
abundant in small opening

Spotsylvania Co.

shrub 2 m. tall.

sterile shrub 1.5 m. tall.

aromatic shrub 2.5 m.
tall; fruit immature.
shrub; bud only.

small tree, 5 m. tall.

weakly ascending.

leaflets reddish green.
sterile.

Tall tree

shrub 2 m. tall; flowers
white.
canes high arching.

~~4B~~ 1964 Virginia

4 45'4119 Athyrium filix-femina f. rubellum
1 very common
1 20 Dennstaedtia punctilobula
locally abundant
1 21 Rubus
1 cf. rare
2 22 Arisaema triphyllum L.
common

1 23 Stellaria cf. pubera Michx.
occasional
1 24 Lonicera japonica Thunb.
abundant
~~8~~
1 25 Woodwardia virginica
common

same - sides of ravine
2 26 Ulmus americana
2 27 Ulmus americana
1 28 Juglans cinerea
occasional
4 29 Carpinus caroliniana
very common

Spottsylvania Co.

rachises reddish.

flowers white.

leaves clear green beneath
spathe deep purple
within, green without.

vine. flowers white,
turning deep yellow,
very fragrant.

young plant, sterile.
young plant, sterile.
small sterile tree.

shrub 4 m. tall;
inflorescences pendent or
drooping.

1964 District of Columbia

4 labels sent

June 3 – Washington,
back of Smithsonian Institution

45430 Catalpa
2 planted

large spreading tree,
flowers white, 3 lower
lobes marked inside
with purple & yellow
spots on lower lobe
besides 3 purple lines.

[illegible]

labels typed JKK

1964 Virginia

Shen. Nat. Park

June 6 - Dickey Hill, just below Shenandoah Valley Overlook, on Skyline Drive in rather poor second growth forest on moderate slope

X 6	45431	Acer negundo locally common	tree about 8 m. tall
X 4	32	Vitis cf. vulpina L. abundant along drive, climbing over trees	large vine
✓2	33	Carex common in old trail	loose tufts, ~~tuft~~ culms depressed.
X 1	34	Actinomeris alternifolia (L.) DC. occasional	erect, to 7 dm tall, sterile at this season. resinous-aromatic when broken.
✓2	35	Euphorbia obtusata L. common in old trail	glands greenish yellow, not red.
✓3	36	Osmorhiza longistylis abundant, forming a continuous herb layer	erect, with licorice odor when broken
X 4	37	Arrhenatherum elatius (L.) Presl occasional on old trail (seen abundantly along drive)	erect, loose tuft.
✓3	38	Fraxinus americana common	tree 10 m. tall,
✓3	39	Viburnum prunifolium occasional	small tree, 5 m. tall, fruits immature.
X 1	40	Geranium columbinum L. occasional on roadside in sun	~~[illegible]~~ decumbent; petals rose purple.

labels Typed

1964 Virginia (1964 No. 9)

June 6 – Ridge bet. Skyline
Drive and The Neighbor
on rocky ridges with
thin ~~[illegible]~~ stunted oak forest

45441 Silene caroliniana
✓2
✓3 42 Vitis
on open rock ledges
✓1 43 Rosa carolina
common
✓1 44 (grass)
occasional in semi-open places
✓1 45 Ceanothus americanus
very common
✓2 46 Carex
uncommon
✓2 47 Vitis aestivalis Michx.
occasional
✓5 48 Heuchera
common
✓2 49 Vitis aestivalis Michx.
occasional
✓4 50 Comandra umbellata
locally common

June 6 – The Neighbor,
on and near summit,
in thin oak woods
✓3 51 Alliaria officinalis Andrz.
large colony on summit
✓3 52 Carex
uncommon

---

depressed; flowers
— already faded.
low vine

with curious galls.

sub-shrub, buds only.

dense tufts, culms
— weak, procumbent.
vine scrambling
— on ground and bushes.
scapes erect, ~~[illegible]~~
— petals , anthers orange.
— vine, tangled on
— rocks.
spreading colonies
connected by cord-like
subterranean rhizomes
flowers white.

erect herb.

caespitose

nos. checked
typed
labels typed

1964 Virginia — Shen. Nat. Park

X2	45453	Carex occasional	caespitose
✓3	54	Asclepias quadrifolia common	flowers pinkish white
✓2	55	Polygonatum occasional on slope	flowers greenish white, past anthesis.
X5	56	Carex common	
✓2	57	Heuchera occasional	
X4	58	grass common	small tufts, culms very ~~[illegible]~~ erect.
X4	59	Rubus locally common.	culms erect to slightly arching; petals white
X4	60	Carex very common along trail	Tufts, culms weak, procumbent.
X1	61	Carex common	tufts
X2	62	Geranium maculatum common	petals rose purple.
X1	63	Arabis rare	
X2	64	Sanicula occasional	flowers greenish.
X1	65	Galium aparine occasional	
✓3	66	Amelanchier occasional	small arching tree, fruits not quite mature.
✓2	67	Hieracium venosum common	leaves red-veined; flowers yellow
X1	68	Viola pubescens Ait. rare in grassy place	erect
X1	69	Carex local on rocky place	culms decumbent

[illegible]
labels typed [illegible]

1964 Virginia

~~45470~~ June 6 - ridge from
 to The Neighbor

in thin stunted oak forest

45470 Vicia
X1 common

X1 71 Arabis
rare

X3 72 Vicia
common

~~73 Pyro~~

June 6 - Skyline Drive
near mile post 27

on thinly weedy sloping
road cut.

X1 73 Pyrola rotundifolia var
americana
small colony

X1 74 Antennaria
common

same - in forest

X1 75 Betula lenta
common

Shenandoah
Nat Park

stems weakly ascending

erect, flowers greenish.

stems weakly ascending,
flowers magenta.

buds only; plants
connected by horizontal rhizomes.

spreading colony.

tree 15 m or more tall,
bark dark.

nos. checked
labels typed [illegible]

1964 Virginia

June 7 – Elk Wallow Shelter
in somewhat disturbed
ground in mixed deciduous
forest, with some pine and hemlock

45476 Viola triloba Schw.
✓3 common, especially near path.
✓1 77 Potentilla simplex Michx.
occasional
✓1 78 Viola palmata L.
rare along path
✓1 79 Viola pubescens Ait.
rare
✓3 80 Viola
common
✓3 81 Chelidonium majus L. ?
occasional
✓1 82 (fern) Athyrium filix-femina (L.) Roth
local in deep shade
✓1 83 Stellaria pubera Michx.
common
✓1 84 Corydalis flavula
rare along path
✓2 85 Viola
common
✓3 86 Barbarea vulgaris R.Br.
occasional~~ly~~ along path
✓2 87 Viola
common
✓1 88 Dentaria laciniata Muhl.
occasional
✓2 89 Viola
common
✓2 90 Oxalis ~~corniculata var filipes~~ flori Salisb. det 75 Lourteig
occasional

Shen. Nat. Park.

leaves on erect pedicels

sap red; petals yellow, falling
quickly, less than 1 cm. long.
— sterile, fronds not erect.

fruiting stems procumbent,
sterile ones erect.

erect.

erect, flowers yellow

not checked

labels typed

1964 Virginia

45491 KR Viola
✓1
common

✓2 92 Oxalis
occasional

✓1 93 Geranium robertianum L.
rare

✓1 94 Aquilegia canadensis
occasional

✓2 95 Veronica officinalis
common.

✓# 96 Oxalis florida Salisb. det. Lourteig 1975
rare

✓1 97 Saxifraga virginiana
local on bare ground

✓1 98 Ranunculus
rare along path

✓1 99 Ranunculus abortivus L.
common

45500 Ranunculus
✓4
common

✓1 01 Carex
common

✓1 02 Arisaema atrorubens (Aut.) Bl.
rare

✓3 03 Osmorhiza claytoni
common

✓1 04 Botrychium virginianum
common

✓12 05 Carya cf. ovata (Mill.) Koch
common

Shenandoah Nat. Park

erect, flowers yellow.

flowers rose pink.

sepals and spurs scarlet,
— rest of flower yellow.
prostrate; flowers
pale lavender lined with
— purple.
erect, flowers yellow.

erect

culms weak

leaves glaucous
beneath; spathe dull
maroon lined with white.

tree 20 m. tall; catkin
pendent, dropping
bark tending to exfoliate
but not conspicuously shaggy.

ms checked
labels typed
xk

1964 Virginia

June 7 - Elk Wallow Picnic Ground
~~a~~ at edge of parking lot

45506 Poa
✓ 4 abundant

✓3 06a Lepidium
common

same - along path in
woods.

✓2 07 Viola palmata L.
common

June 7 - Little Devil Stairs
Parking Overlook, Skyline
Drive
grassy roadside

✓1 08 Festuca
occasional

✓2 09 Lychnis
rare

✓2 10 Cerastium
common

✓2 11 Convolvulus spithameus
local

✓1 12 Sagina
occasional

✓1 13 Stachys?
common

June 7 - Jinnie Gray
Fire Road near Skyline Drive

4 14 Barbarea
common along road in forest

Shen. Nat. Park

a number of stems from
root crown; petals white.
leaves dark green.

very deep-rooted; flowers
white.

flowers rose-pink; plant
aromatic.

erect

1944 Virginia

labels typed xh June 7 - Jenny Gray Fire Road, above Little Devil Stairs in second-growth hardwood forest. 2900' 88^{5}4 m

45515 Athyrium ? thelypteroides (Michx.) Desv.
\1 common

\3 16 Hydrophyllum macrophyllum Nutt. flowers white.
common

\3 17 Saxifraga micranthidifolia (Haw.) Britt. petals white.
abundant in wet soil below spring

June 7 Jenny Gray Fire Road below Little Devil Stairs Trail ~~road~~ in forest 2600' 795 m.

\3 18 Scrophularia lanceolata Pursh erect; corolla greenish-brown.
common on road embankment

\1 19 Sanicula flowers greenish white
rare on road cut

\1 20 Ligusticum rather glaucous
occasional on road cut

\1 21 Ligusticum
occasional on road cut.

June 7 - Jenny Gray Fire road just above junction of Keyser Run Fire Road, in mixed pine and hardwood forest 2000' 610 m.

\5 22 Vitis large liana
at edge of right-of-way clearing

\1 23 Carex
occasional

\2 24 Potentilla simplex Michx. procumbent; petals yellow.
common along road

[illegible]

1964 Virginia

Shen. Nat. Park

410 m.

45525 Galium triflorum — procumbent.
√1 common

√1 26 Botrychium virginianum
common

√2 27 Viola
common

X1 28 Oxalis florida Salisb. det. Lourteig, 75 — flowers yellow.
occasional

√3 29 Viola triloba ~~[illegible]~~ Schw.
common

X1 30 Ranunculus abortivus L.
occasional

X4 31 Lindera benzoin — shrub 2 m. tall, aromatic when broken; fruit immature.
locally very common, forming a shrub layer

June 7 – Jinny Gray Fire Road, above Piney Branch Trail, on small tributary of Piney Branch — 1600' ~~480 m~~ 490

√4 32 Carex
low ground near stream

X1 33 Viola canadensis L.
occasional in low ground near stream

√3 34 (grass) — small tufts
common in low ground near stream

√4 35 Carex — glaucous, culms weak.
in low ground near stream

√3 36 Bromus — isolated culms or very small tufts.
common in wood

X1 37 Cerastium
common in wood

X1 38 Galium aparine — procumbent.
occasional in low ground

not checked
1944 Virginia

labels typed
HK

June 7 – Piney Branch, at edge of Park, Thornton River in irregular rocky bottom land, with hemlocks and hardwoods.

45539 Rosa
✓9 in tangle below road
✓1 40 Thalictrum
common
✓2 41 (grass)
common
✓2 42 Arabis
occasional on rocks at edge of stream
✓1 43 Galium latifolium
on mossy bank
✓2 44 Panicum
occasional
✓1 45 Thalictrum dioicum L.
rare, one seen.
✓3 46 grass
common
✓2 47 Viola
near edge of stream
✓2 48 Euphorbia
occasional
✓2 49 Viola
common near edge of stream
X 1 50 Cryptotaenia canadensis
rare along road
✓7 51 Rhus toxicodendron L.
common

Shen. Nat. Park

1200'
366 m.
Drainage

arching bush, fruit green.

herb 1 m. tall, leaves glaucous beneath.

small tufts, erect.

flowers reddish.

small tuft

erect

scrambling vine

ms. ch[illegible]
labels typed
HK

1944 Virginia

June 7 – Keyser Run Fire Road, just inside Park boundary in second growth forest
1400 ft.
427 m

X 1	45552	Arisaema atrorubens L. occasional
X 1	53	Goodyera pubescens occasional
✓ 1	54	Oxalis rare
X 1	55	Galium circaezans rare

June 7 – Flats near intersection of Jinny Gray Fire Road and Keysers Run Fire Road at about 2000', largely covered by almost pure stand of Pinus strobus, mostly less than 3–4 dm dbh. Could be an old plantation.

Very little ground vegetation. Sparse Parthenocissus, a few Rhus toxicodendron, little else but a layer of needles.

Shen. Nat. Park

leaves glaucous beneath, spathe green.

leaves dull green with white veins.

flowers yellow.

flowers greenish.

June 6 – Ridge to The Neighbor is a round topped ridge with poor Quercus prinus forest, here and there ~~[illegible]~~ a shrub layer of Q. ilicifolia. Ground vegetation rather thin. Near Blue Ridge end, Vaccinium vacillans and other Ericaceae abundant. Less so farther out. Vicia 2 spp. very common. Chenopodium standleyi. A number of Carex spp. very common. Asclepias quadrifolia common.

Occasional outcrops of a dark sandstone.

1964 Virginia

June 14 - Rt. 50 4 mi. e. of Gore
On hill on both sides ~~right~~ of road a large colony of Opuntia, in full bloom. Hill is ~~[illegible]~~ ~~with [illegible]~~ grassy & dark shale & dark limestone.

June 14 - Mts. surrounding Gore are densely forested. (Turn left at fire station) Road to south, same, through a valley with mixed second growth. Road cuts very shaley. Much Ailanthus. Pine, esp. P. virginiana, being cut for pulp wood. Past Boy Scout camp and reservation. Kalmia in flower. Back Creek Valley, flat fields in bottom are cleared and pastured. Scattered houses and old hotel.

W. Va. boundary. Shortly after I turned left on a small wood road, through rather young second growth toward Great North Mt.

Frederick Co.

at corner of Lucas land an area where Kalmia is very abundant, but small.

Small oak-hickory wood with young tulip poplar, red maple, chestnut sprouts, much young sassafras, Corylus. Much dead chestnut.

a
–
ccinea

americana
t.
dra
ea, (one seen 50 ...
±
ata
niana
ubra
y

j. avium

[illegible]

4.55.54 (1)

1964 Virginia

June 14 - Rt. 50 4 mi e. of Gore
On hill on ~~east~~ both sides of road a large colony of Opuntia in full bloom. Hill is [illegible] grassy & dark shale & dark limestone.

June 14 - Mts. surrounding Gore are densely forested. (Turn left at Gas station) Road to south, soon, through a valley with mixed second growth. Road cuts very shaley. Much Ailanthus. Pine, esp. P. virginiana, being cut for pulp wood. Past Boy Scout camp and reservation. Kalmia in flower. Back Creek Valley. Flat fields in bottom are cleared and pastured. Scattered houses and old hotel.

W. Va boundary. Shortly after I turned left on a small wood road, through rather young second growth, toward Great North Mt.

Frederick Co.

at corner of Lucas land an area where Kalmia is very abundant, but small.

Small oak-hickory wood, with young tulip poplar, red maple, chestnut sprouts, much young sassafras, Cornus. Much dead chestnut.

Trees Tilia
Sassafras
Q. alba — Quercus coccinea
Q. prinus
Juglans cinerea — Fraxinus americana
Carya spp.
Pinus rigida — Liriodendron
Acer rubrum, one ca. 50 cm dbh ±
Robinia — Betula lenta
Nyssa — Pinus virginiana
Prunus serotina — Quercus rubra
Second story
Cornus
Cercis
Nyssa
Prunus cf. avium
Robinia
Carpinus

Shrub layer
Corylus cornuta
Vaccinium cf. corymbosum
Smilax rotundifolia
Viburnum acerifolium
Rubus occ. Rhus glabra Lindera
Vitis
Menziesia pilosa
Castanea dentata Parthenocissus quinquefolia Kalmia
Vaccinium vacillans
Robinia pseudo-acacia
Hamamelis Amelanchier
Gaylussacia baccata
Herb
o Antennaria plantag.
o Polystichum acrostichoides
o Goodyera pubescens
c Geranium maculatum
o Dioscorea quaternata
c Botrychium virginianum
c Smilacina racemosa
c Cimicifuga
o Cypripedium calceolus
l Adiantum pedatum
c Galium triflorum
c Circaea quadrisulcata
r ~~Sa~~Lysimachia verticillata
Desmodium nudiflorum
Solidago cf. caesia
Cunila origanoides
Hedyotis purpurea v. longifolia
Hieracium venosum
Eupatorium rugosum

2490'

upper slope is a scrubby forest of Quercus prinus on almost bare rock. Much fallen chestnut

Generally west slope

Land bought from
Clinton L. Butler
Winchester
(bldg. contractor)

Fire came through 10-15 years ago. Some stumps still show charring.

Grove of small Pinus virginiana to 20 cm dbh. Acer rubrum seedling abundant, to 2 m

SW corner - Kalmia &
Menziesia abundant
Vaccinium
Potentilla
Rubus
Chimaphila
Fragaria

Ravine with stream
~~[illegible]~~ Ostrya
Carpinus
Betula lenta
Acer rubrum
Liriodendron
Cornus florida
Collinsonia
Alnus
Medeola
Osmunda cinnamomea
Betula alleghaniensis

4.2 mi. from Gore

1.8 mi from main rd.

Lucas property - one corner projects over into W. Va.
Most is in Frederick Co. Va.

Hugh Ross Tract across road -
73 acres. Laurel. White Oak.
Large bluff.
near Barnstown Md. (Springfield Farm Md.)
RFD #2 Germantown Md.
Area above Lucas Tract is
56 acres. Small stream
comes from this.

nos. checked
labels typed
HK

1964 Virginia

June 13 – west slope of
Great North Mountain,
south of Gore
in second growth forest

45556 Panicum
√ 2 in old abandoned road

√ 2 57 Panicum
common in old abandoned road

√ 2 58 Carex
occasional in old abandoned road

X 1 59 Amelanchier [Discarded – inadequate spec.]
occasional

X 1 60 Ostrya virginiana
occasional near stream

√ 2 61 Lysimachia
local on wet ground

√ 2 62 Dennstaedtia punctilobula
locally abundant
in moist places.

√ 2 63 Streptopus roseus
very local in ravine

√ 1 64 Alnus serrulata Willd.
very local in wet ravine

X 1 65 Lycopodium lucidulum Mich
abundant colony
in wet ravine.

X 1 66 Oenothera perennis L.
rare in old road.

X 1 67 Carpinus caroliniana
occasional in ravine

X 2 68 Conopholis americana
very abundant locally
under Quercus rubra

Frederick Co.

815–830 m.

several culms from
base, erect.
small tufts, erect.

procumbent shrub,
sterile.
Tree [illegible] m. tall; sterile.

flowers yellow.

shrub 2.5 m. tall.

flowers yellow

sterile large shrub.

nos. checked

labels typed
1944 Virginia

45569 Kalmia latifolia
✓ 2 locally very abundant
X 1 70 Hammamelis virginiana. L.
occasional
✓ 2 71 Asclepias quadrifolia
occasional
✓ 4 72 Galium latifolium Michx
common
X 1 73 Carex
rare
X 1 74 Vitis
common
✓ 2 75 Juglans cinerea
occasional, on
rocky slope
X 1 76 Chimaphila maculata
occasional
✓ 1 77 Carex
occasional
✓ 2 78 Acer nigrum var. glaucum
rare
✓ 2 79 Menziesia pilosa
common
✓ 2 80 Carex
occasional
✓ 1 81 ~~Hypopitys~~ Monotropa hypopitys
rare
✓ 2 82 Rubus flagellaris
occasional on thin soil
X 1 83 Spiraea betulaefolia v. corymbosa
very local on thin soil
X 1 84 Hieracium venosum
rare

Frederick Co.

shrub 1 m. tall, flowers
— very pale pink.
sterile shrub.

flowers pinkish white.

roots yellow; flowers
maroon.

woody vine, climbing
in trees, leaves slightly
— pale beneath.
Tree 10 m. tall, 15 cm.
thick; nuts on ground.

leaves dark green,
marked with pale.

large tree; leaves
— slightly glaucous beneath.
shrub 0.7 m. tall,
leaves very slightly
— glaucous beneath.
culms procumbent,
leaves green.
— pale yellowish white.

~~ste~~ primocanes ascending,
— floricanes almost prostrate
sterile

leaves red-veined; heads yellow.

nos. checked
labels typed JKK

1944 Virginia — Frederick Co.

✓1 45585 Hedyotis purpurea v. longifolia — flowers almost white.
occasional.

✓1 86 (fern) Dennstaedtia punctiloba (Michx.) Moore — st
very local

✓1 87 Potentilla — fl
occasional

✓1 88 Dryopteris marginalis (L.) A. Gray — fr
rare
a
t

✓1 89 Carex
occasional

✓1 90 Festuca obtusa — cu
~~occasional~~ rare

✓1 91 Galium circaezans — fl
occasional

✓2 92 Botrychium virginianum
common

✓1 93 (fungus) Polyporus umbellatus Pers. ex Fr. — (spe
rare in dead leaves — pe

UNITED STATES DEPARTMENT OF AGRICULTURE
AGRICULTURAL RESEARCH SERVICE
CROPS RESEARCH DIVISION
BELTSVILLE, MARYLAND

June 18, 1964

To: F. R. Fosberg

From: C. R. Benjamin
Mycology Investigations, CPRB, CRD C. R. B.

Subject: Identity of Fungus, per your memo dated June 14, 1964

The fungus that you recently sent to us as No. 45593, collected in deciduous woods on Great North Mountain, has been examined and identified by Mr. J. A. Stevenson, who found it to be *Polyporus umbellatus* Pers. ex Fr. The family name is Polyporaceae. This particular species of polypore is a fleshy type and was partly decomposed when received. Unfortunately, therefore, it had to be discarded.

Lost

Plants of VIRGINIA

Frederick County

?

Polyporus umbellatus Pero. ex. Fr.

Locality West slope of Great North Mountain, south of Gore.

Occurrence Rare in dead leaves in second growth forest.

Date June 13, 1964 Alt. 815-830 m

Coll. F. R. Fosberg No. 45593

Remarks (specimen discarded by people at Beltsville).

nos. checked

1944 Virginia Frederick Co.

Labels typed JHK

√ 1 45585 Hedyotis purpurea v. longifolia flowers almost white.
occasional.

√ 1 86 (fern) Dennstaedita punctiloba (Michx.) Moore sterile.
very local

√ 1 87 Potentilla flowers yellow.
occasional

√ 1 88 Dryopteris marginalis (L.) A. Gray. fronds strongly ascending. glaucous beneath.
rare

√ 1 89 Carex
occasional

√ 1 90 Festuca obtusa culms ascending.
~~occasional~~ rare

√ 1 91 Galium circaezans flowers pale green.
occasional

√ 2 92 Botrychium virginianum
common

√ 1 93 (fungus) Polyporus umbellatus Pers. ex Fr. (specimen discarded by people at Beltsville).
rare in dead leaves

1964 Pennsylvania

June 20 - Powdermill Reserve

New 10 acre property for Museum + nature center.
Old farm land - knoll with crab apple on slopes forming open to closed thickets. Open at top with a few Crataegus. very thin soil - shaly.
Down below - patches of wood and open fields.

June 21 - small marshy spot south of Berlin about 3 mi. s.
Lower spot with Typha. Slightly higher with various Carex, Juncus effusus, etc.
Meadow with mixture of Solidago, etc. + much Equisetum arvense
Clump of alnus incana?

1964 Maryland

June 21 Finzel Swamp
Garrett Co. 2700'
2 mi. n. of Frostburg

*

Where next to lowest road crosses there is a scrub of Vaccinium corymbosum, Amelanchier, Alnus, ~~etc. about~~ Rhododendron maximum, Nemopanthus, etc. about 3 m. tall, varying from rather loose to dense with scattered trees to 10 m. of Larix, Acer rubrum, Pinus strobus, Betula cf. alleganiensis, Nyssa Magnolia acum.
Alnus is dominant on east side with some Amelanchier, Viburnum cassinoides (?)
Here ground covered by Symplocarpus, Glyceria, Carex spp., Thalictrum, young Sambucus canadensis, ground hummocky.
Thelypteris palustris
Dryopteris
Galium Rosa palustris
Caltha

nos. checked

labels typed HK

1964 Pennsylvania

June 21 – 2½ mi. s. of Berlin,
in marshy ground

45594 Stellaria graminifolia
✓4 locally common
✓2 95 Oenothera
very local
X1 96 Equisetum arvense var. borealis
abundant
✓2 97 Prunus virginiana
✓4 98 Alnus ~~incana~~ rugosa (Du Roi) Spr.
common

~~June~~ Maryland
June 21 – Finzel Swamp,
2 mi. n. of Frostburg
in scrubby swamp
X1 99 Caltha palustris
rare in shade in water.
✓2 45600 Pyrus (Aronia)
occasional
X1 01 Lyonia ligustrina
occasional
X3 02 Amelanchier
common

✓3 03 Pyrus (Aronia)
common
✓3 04 Nemopanthus
common
✓4 05 Viburnum
common
X2 06 Viburnum cassinoides
rare

---

stems weak, supported
– on other plants; flowers white.
flowers yellow.

– shrub; fruit immature.
shrub 3 m. tall; leaves
glaucous beneath.

Garrett Co.

shrub 2 m. tall

shrub 2.5 m. tall,
– buds only.
shrub 3 m. tall, fruits
crimson, sweetish but
– not very good.
shrub 2.5 m. tall;
– fruit immature.
shrub 2 m. tall,
– fruits immature.
shrub 3 m. tall; flowers
– white.
shrub 2 m. tall; buds only.

mss checked

1964 Maryland

Labels typed WK

45607 Alnus rugosa ~~serrulata~~ (Du Roi) Spr.

X 1 ~~common~~ abundant

X 1 08 (grass)

abundant under Alnus

X 1 09 Alnus rugosa ~~serrulata~~ (Du Roi) Spr.

abundant

X 1 10 Galium obtusifolium

occasional

X 1 11 Dryopteris

rare

~~12 Dryopteris Thelypteris~~

✓2 12 Thelypteris palustris

common

X 1 13 Arisaema triphyllum

rare

X 1 14 Calla palustris

locally common in water

X 1 15 Vaccinium corymbosum

very common

shrub 3 m. tall; leaves

— glaucous beneath.

culms erect to strongly ascending, single or in small tufts; panicles

— arching.

shrub 3-4 m. tall, bark rich brown, smooth except for prominent white lenticels; leaves

— glaucous beneath.

stems weak, erect, flowers white 3-4-merous.

fronds erect, all seen sterile.

— leaves clear green beneath.

shrub 2 m. tall; fruit immature

ms. checked

1964 Virginia

Labels typed HH

July 3 - just n. of Spitler Knoll Overlook, on Skyline Drive

edge of wood.

✓ 45,616 Tilia heterophylla Vent.

July 4 - below Elk Wallow Shelter
in oak-hickory woods

✓1 17 Circaea quadrisulcata var. canadensis (L.) Hara
occasional

✓2 18 Sanicula canadensis
common

✓2 19 Rubus occidentalis
occasional

✓1 20 Bromus japonicus
rare along trail

✓1 21 Cimicifuga racemosa
common locally

✓1 22 Tilia americana
occasional

✓2 23 Carex
occasional

✓1 24 Dryopteris "spinulosa"
in bottom of dry rocky ravine:

✓4 25 Dryopteris marginalis

✓1 26 Dennstaedtia t punctilobula (Michx.) MOORE
occasional

✓1 27 Asarum canadense
locally very common

---

tree 8 m. tall, leaves notably white beneath.

flowers white.

flowers whitish.

primocanes erect, floricanes procumbent;
- fruits turning black.

culms erect

erect, to 1.5 m. tall, flowers
- foetid, white

young understory tree 8 m. tall.
sterile.

fronds strongly ascending from short erect rhizome.
- fronds strongly ascending from short erect rhizome, under surface glaucous.
- sterile

all seen sterile. rhizome with strong ginger odor.

Nos. checked

1964 Virginia

Labels typed

45628 Festuca obtusa
√3 occasional
√1 29 Tilia americana v. neglecta
occasional
√3 30 Dryopteris "spinulosa"
occasional
√4 31 Galium triflorum var. asprelliforme
common
√2 32 Thaspium
rare
√6 33 Lindera benzoin
locally common on flat ground
√5 34 Galium circaezans Michx.
very common
√1 35 Viola pubescens Ait. var. pubescens
rare

July 4 Elk Wallow Picnic Ground
√5 36 Cornus alternifolia
occasional in oakwoods

July 4 – ~~[illegible]~~ Skyline Drive
just north of Browntown Valley overlook
in edge of mixed hardwood forest
√3 37 Juglans cinerea
occasional
√7 38 Ostrya virginiana
common
√14 39 Tilia americana L.
occasional

Shenandoah Nat. Park

culms arching

sterile understory tree
7 m. tall.
fronds ascending.

prostrate

branched at base,
stems ~~[illegible]~~ erect,
fruit immature.
shrub 3 m. tall, fruit
immature.
stems ascending.

shrub 3 m. tall (others seen
to 5 m.); fruit immature.

tree, fruit immature

tree 8 m. tall.

tree 20 m. tall; flowers
cream yellow, very
fragrant.

July 4 Fort Wyndham Rocks - Spectacular outcrop of fine hard sandstone with great cracks. Tilia cf. heterophylla and Betula lenta forest, rather open. Gaylussacia baccata so dry the ~~fls~~ infls. are simply dried-up.

July 5 - Limberlost Trail
Thickets of Alnus rugosa in old orchard, with apple, crab apple, Hamamelis, etc.

In Limberlost proper, a good growth of moderate size Tsuga, scattered very large old oaks of several kinds. Many decaying stumps. Must have been a magnificent oak-chestnut forest, but logged and Tsuga came in. The large oak are those not worth cutting

73 paces from beginning of Limberlost Trail at parking lot, a chestnut sprout about 20' high 8-10 cm diam. has a large blight lesion on one side, a healed one on other side. Beside this is a dead

stub about same size. This sprout is beginning to flower at top.

Big Meadows Swamp - The open place in center with buck bean has no water, even in holes. Mud is still wet. Spiraea flowering abundantly. At lower end the stream is completely dry. Oenothera fruticosa has become much more abundant than I have seen before.

Chestnut + black oak sw. of Jeremy's Run Overlook mr. check

labels Typed -VK

1964 Virginia

July 4 – Fort Wyndham Rocks, north of Compton Gap on great sandstone boulders in mixed hardwood forest.

45640 Ribes
X6 common

X3 41 Amelanchier
occasional

X15 42 Tilia heterophylla
common

X5 43 Betula lenta
common

X6 44 Vitis aestivalis var. argentea (Muns.)
common, climbing.

X1 45 Gaylussacia baccata
local

X3 46 Ribes
occasional

same – on rocky ground around great sandstone boulders in mixed hardwood forest.

X2 47 Lysimachia quadrifolia
local

X5 48 Scutellaria ovata var.
local (also seen on boulders)

X5 49 Prunus virginiana
abundant

X1 50 Aquilegia canadensis
occasional

---

depressed contorted shrub, not spiny.

tree 15 m. tall, leaves
— white beneath.

tree 10 m. tall, broken.

7cm. extensive vine,
leaves white beneath.

— shrubs 0.7 m. tall
suffering from drought,
almost wilted.

— shrub 0.6 m. tall,
leaves dark green.

flowers yellow

stems decumbent to ascending. flowers blue.

shrubs to 3 m. tall
— fruit immature

erect; spurs and sepals red, petal limb yellow.

1964 Virginia

45651 Circaea quadrisulcata var. canadensis (L.) Hara
✓3 common

✓1 52 Smilax herbacea
rare

July 5 - above Elk Wallow Shelter
along trail in oak-hickory forest

✓1 53 Juglans cinerea
occasional

✓4 54 Thalictrum
common

✓2 55 Leonurus cardiaca
very local

✓2 56 Oxalis corniculata var.
common

✓1 57 Geranium
rare

florida Salisb. det. Lourteig

✓1 58 Oxalis corniculata va.
rare

July 5 - just north of Jeremy's Run Overlook, Skyline Drive.
in edge of hardwood forest

✓6 59 Castanea dentata

✓3 60 Quercus velutina
~~com~~ common

July 5 - Old Rag View Overlook

✓1 41 Yucca smalliana
single plant beside road

erect, flowers white, stigma not deeply cleft.

leaves glaucous. fruit immature.

tree 20 m. tall.

branched from base, erect, flowers lavender.

erect, flowers yellow. rhizome slender, horizontal.

75

~~flowers yel~~

sprouts ~~to~~ about 6 m. tall, dead at top.

tree 15 m. tall.

rosette with erect panicle of white flowers, 1.5 m. tall.

[illegible]

1964 Virginia

Labels typed [illegible]

July 5 - Milam's Gap
in brushy meadow

45662 Scrophularia
✓ 2 rare

✓2 63 Galium verum L.
dense colony 5 m. across

July 5 Big Meadows Swamp

✓6 64 Oenothera
very common in lower end of desiccating sphagnum bog

same - in open central part of swamp

✓3 65 Osmunda regalis
rare

✓2 66 Arisaema stewardsonii
rare

✓2 67 Onoclea sensibilis
very common

same - in drainage ditch

✓3 68 (grass)
occasional

July 5 - Big Meadows Camp Ground

✓3 69 Cerastium
along path

Shenandoah Nat. Park

erect corollas dark
– bronze, a brownish maroon.
stems erect from ~~a~~
matted buried rhizomes,
buds yellow.

flowers bright yellow,
open but fading at 3:30 p.m.

fronds erect, in dense clump

spathe strongly fluted
without, flutings white,
rest of spathe green except
blackish - maroon stripes
within corresponding to
areas between flutings,
spadix pale green.

erect clump.

petals white, bifid.

1944 Virginia

July 5 - Big Meadows Picnic Ground
in open woodland

45670 Dianthus armeria
very common

1 71 Dianthus armeria
rare, with pink form

July 5 - Trail to Limberlost, Skyline Drive
In semi-open level ground

1 72 Tilia heterophylla Vent.
shaded

4 73 Crataegus
common

3 74 (grass)
common along trail in shade

2 75 Oxalis
common

7 76 Alnus rugosa (DuRoi) Spr.
locally common, forming thickets.

3 77 Ribes
occasional

6 78 Ilex montana
rare

2 79 Lysimachia quadrifolia
common

Shenandoah Nat. Park

flowers deep crimson-pink.

flowers white.

young tree 10 m. tall, sterile.

~~d~~densely branched shrub 3 m. tall; fruit green.

large shrubs or small trees to 5-6 m. tall, bark rich brown with conspicuous pale lenticels; leaves bluish green beneath.

shrub 0.8 m. tall, fruit green.

shrub 3 m tall; fruit immature.

flowers yellow.

not checked

Labels typed

1964 Virginia

July 12 – Sleepy Hollow
in small thicket on
roadside.

45680 Acer cf. saccharinum
√2
~~[illegible]~~
√3 81 Acer ginnala

July 19 – Sleepy Hollow
in wooded yard,
common in openings
√2 82 Oxalis
√4 83 Oxalis

Fairfax Co.

shrub 3 m tall sterile;
leaves very glaucous beneath.
– shrub 1.2 m, tall
leaves green beneath.

erect; flowers yellow
erect; flowers yellow.

~~Book 73~~
~~Begin # 45-2715-~~

STANDARD FORM NO. 64

✓44303
~~44341~~
✓45375
✓45490
✓45492
✓45496
✓45528
~~45554~~
✓45656
✓45658
✓45675
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~~45682~~

~~456[illegible]~~

STANDARD FORM NO. 64

Office Memorandum • UNITED STATES GOVERNMENT

TO : Dr. C. R. Benjamin
Div. of Mycology

DATE: June 14, 1964

FROM : F. R. Fosberg

SUBJECT: Identity of fungus.

Enclosed is an extraordinary mushroom that I found in an area that the Nature Conservancy is planning to preserve for future scientific study. One of the first needs is an inventory of the plants and animals.

Could you please take a look at this thing and, if possible, send me its name (also the family). You can send the name to me,
care of National Research Council
Stop 44
by governemtn messenger service.

Thank you,

FIELDTRIP

May 14

Leaders: FOLDATS, E.
VARESCHI, V.

Maracay (6.30 a.m.) - Encrucijada (Breakfast) - San Juan de los Morros - San Sebastian - Observation stop - San Casimiro - Santa Teresa - Caucagua - [illegible] Observation stop - San José de Rio Chico - Puerto Píritu (Lunch) - La Ceiba (Observation stop) - El Tejero (Observation stop) - Jusepin (Night).

Observations:
antropic savannas
flooded savannas
savanna on sandy soils (Monagas)

Dr. Howard E. Weaver
605 E. Florida Ave. Urbana Ill.
asst. Prof. Dept. of Recreation
U of Ill.

Book 73
Begin # 45-2815-